FIG. 1

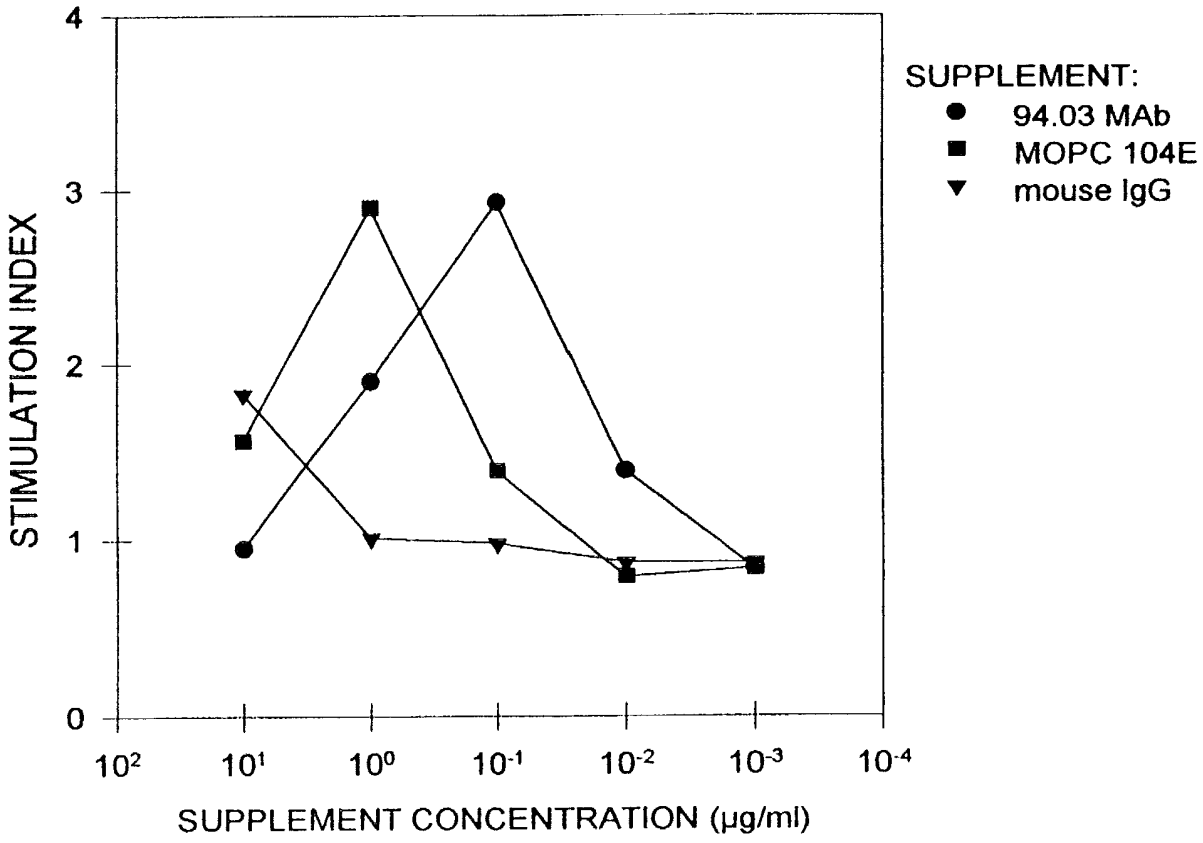


FIG. 2

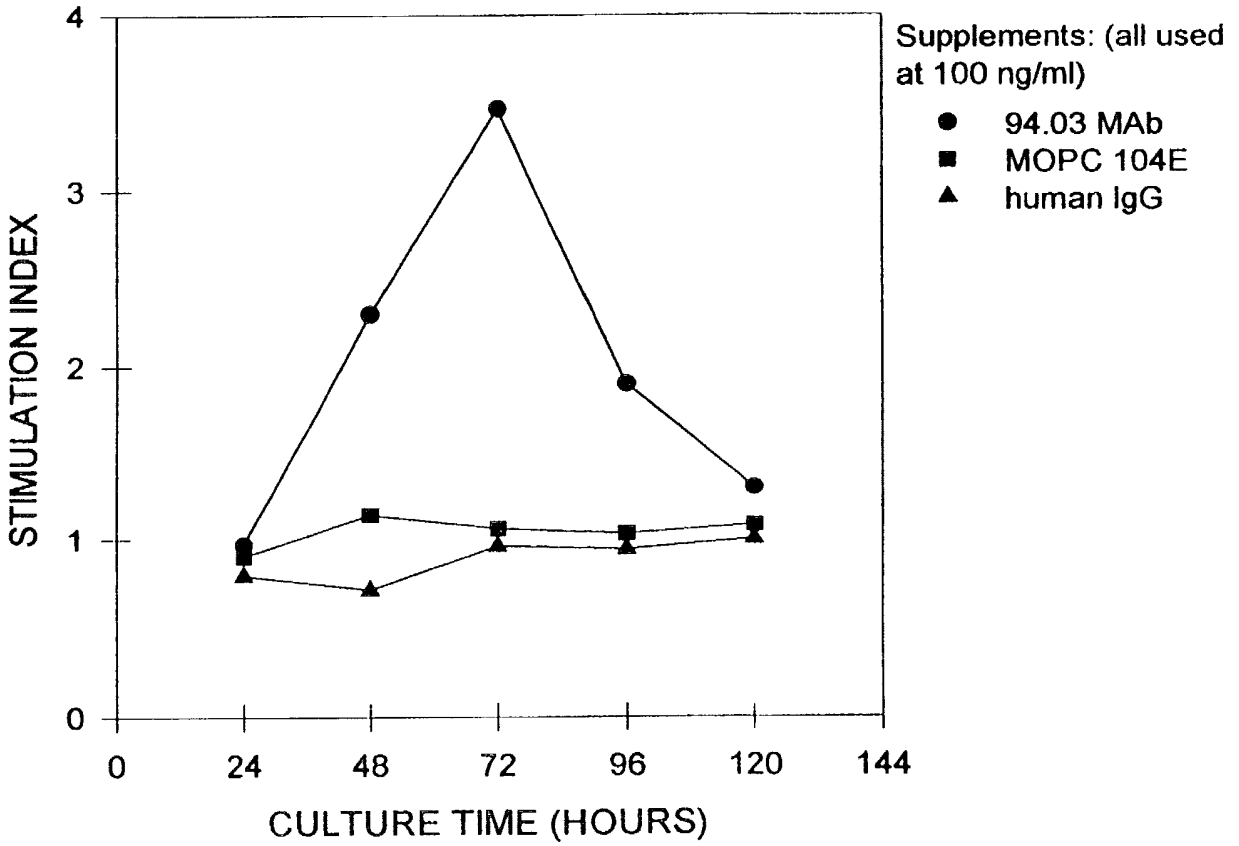
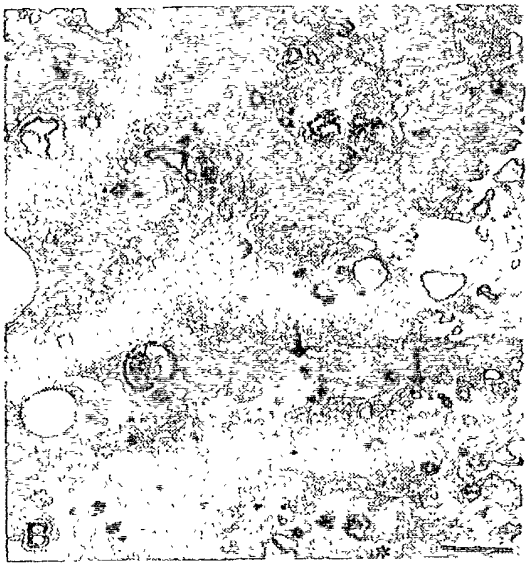


FIG. 3A

FIG. 3B



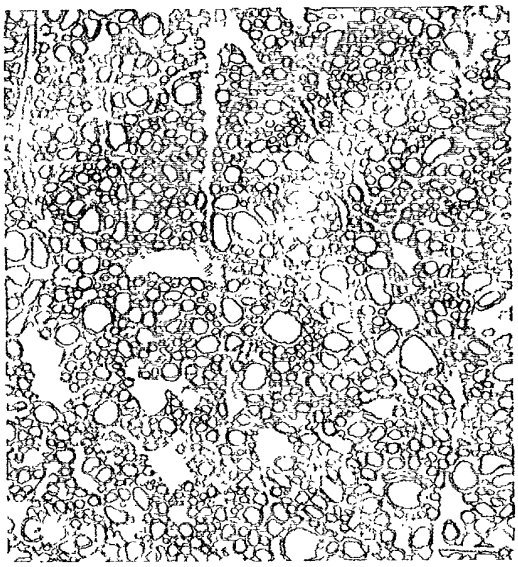


FIG. 3C

FIG. 3D

FIG. 5

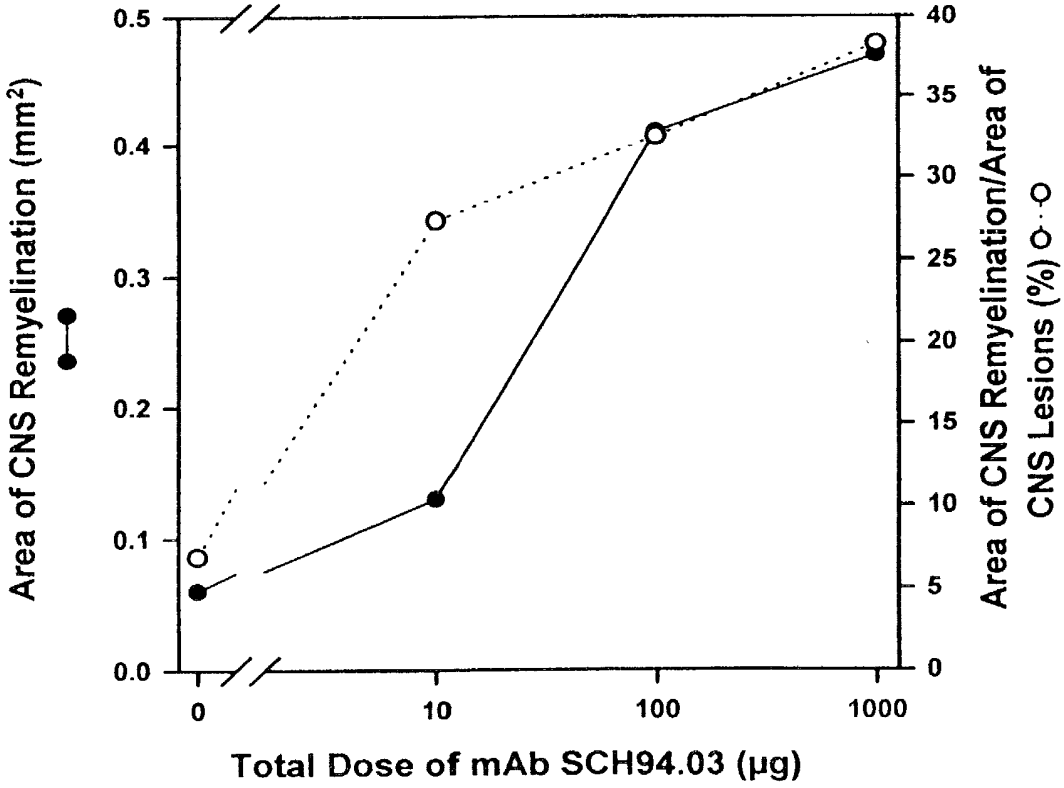


FIG. 6

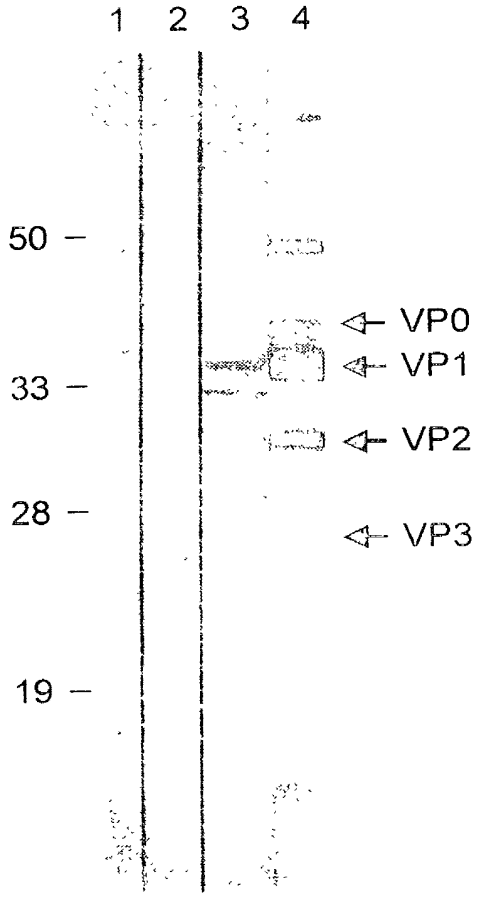


FIG. 7A

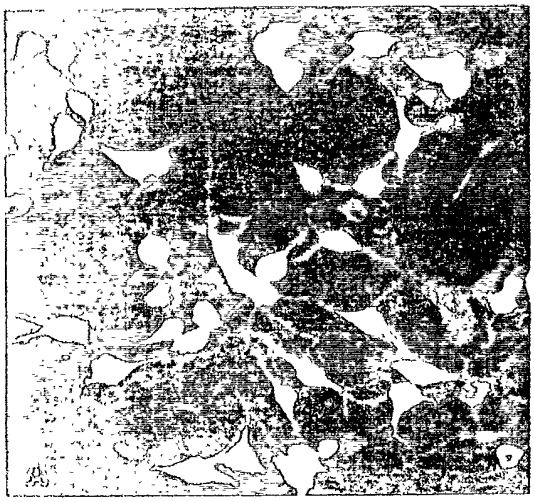


FIG. 7B

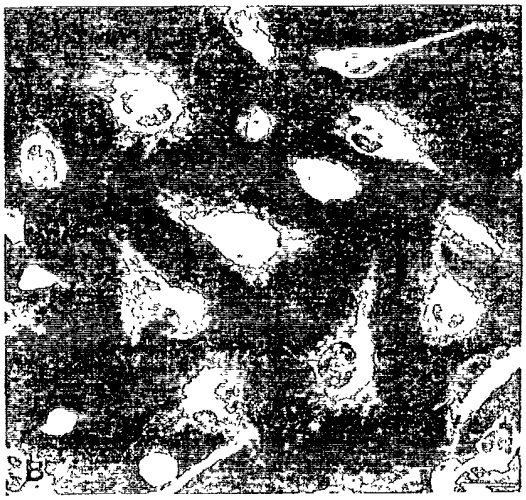


FIG. 7C

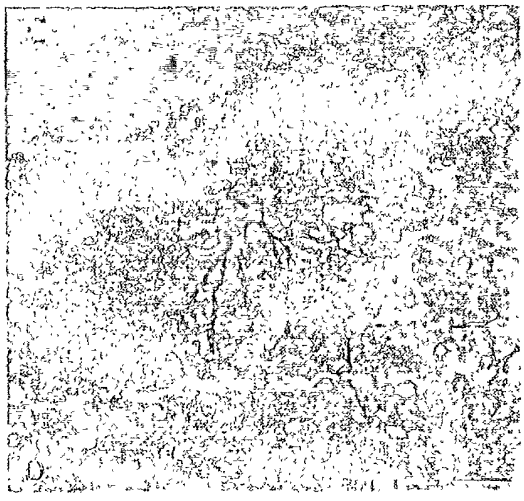


FIG. 7D

FIG. 8A

FIG. 8B

FIG. 8C

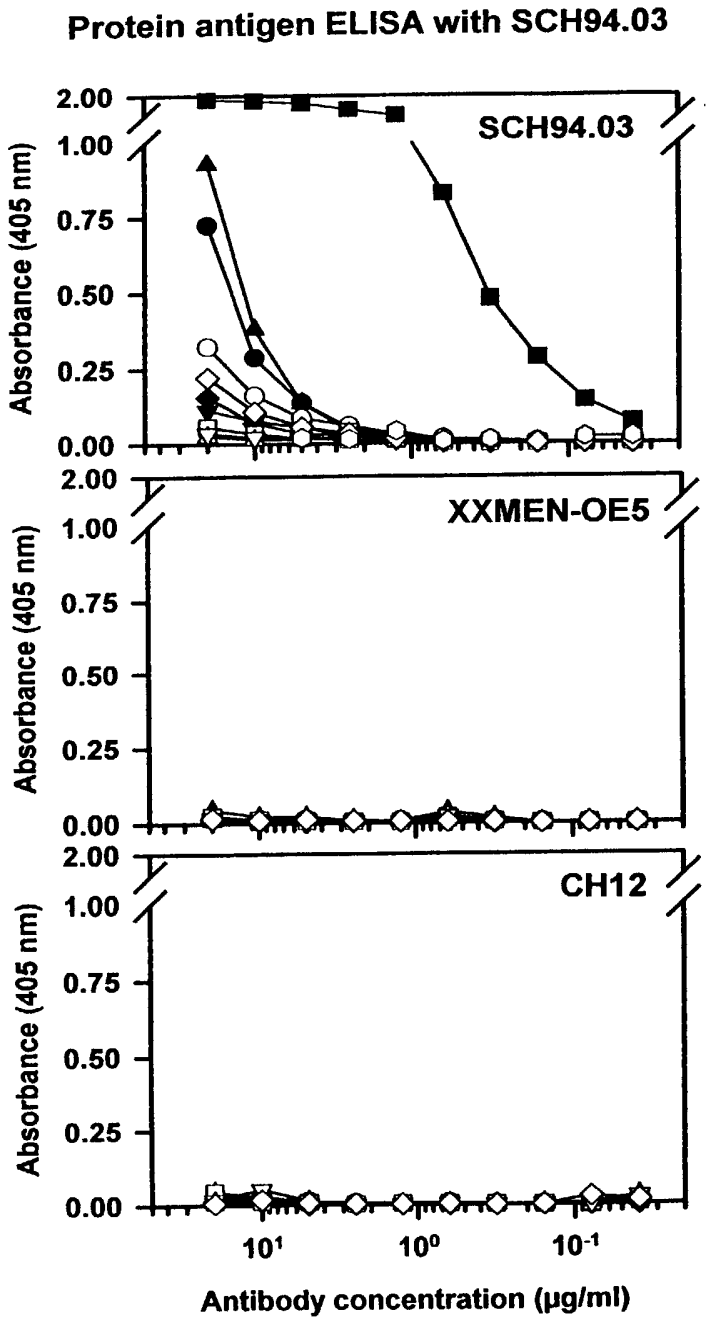
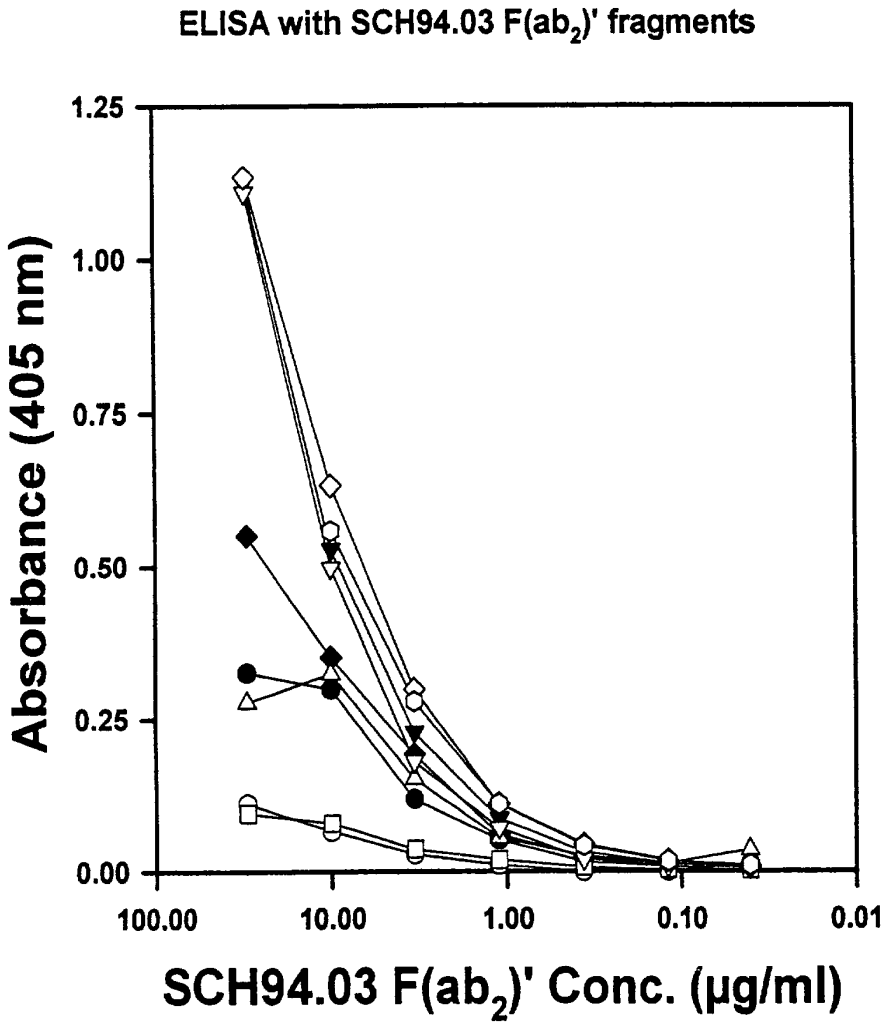


FIG. 9



Antigen:

- ● Bovine thyroglobulin
- ▼ Human spectrin
- ◆ Bovine tubulin
- ○ Bovine myelin basic protein
- □ Bovine myosin
- △ Dog myoglobin
- ▽ Trinitrophenyl (TNP)-BSA
- ◇ Rabbit actin
- ⬡ Mouse hemoglobin

FIG. 10A

FIG. 10B

FIG. 10C

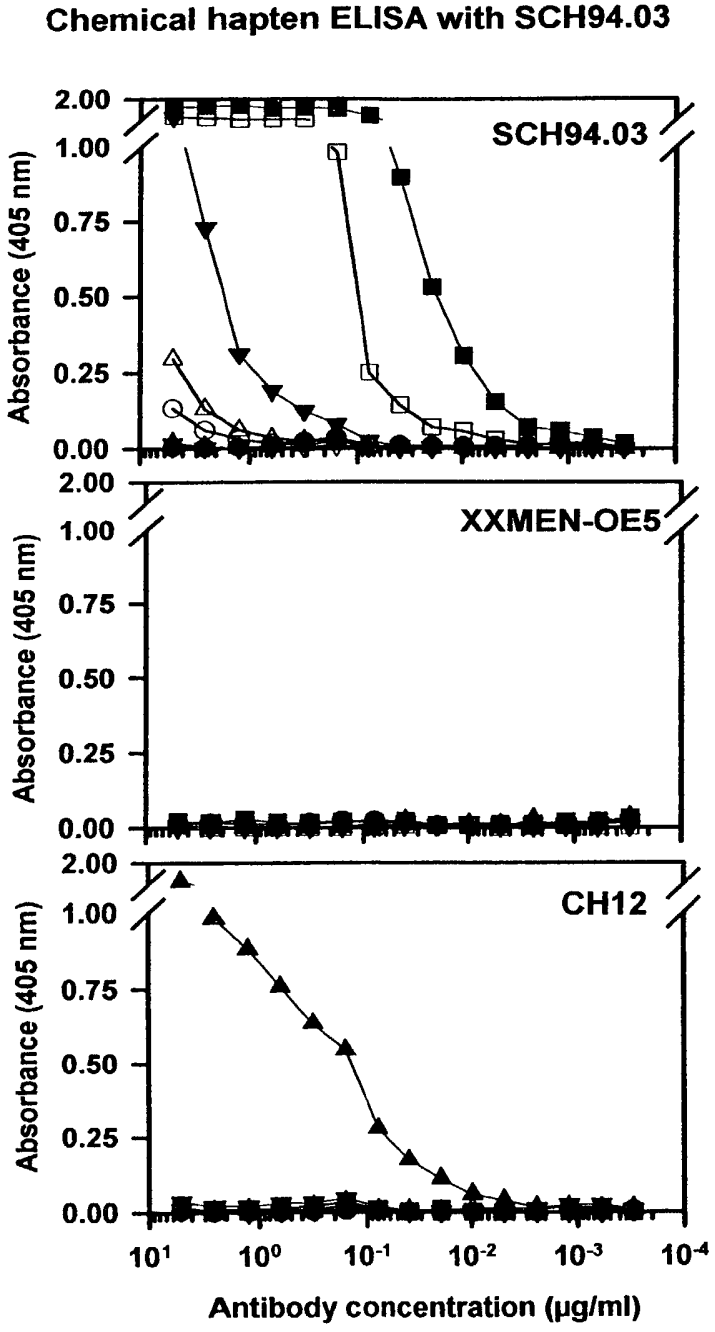


FIG. 11A Immunoglobulin Light Chain Variable Region Sequence of SCH94.03

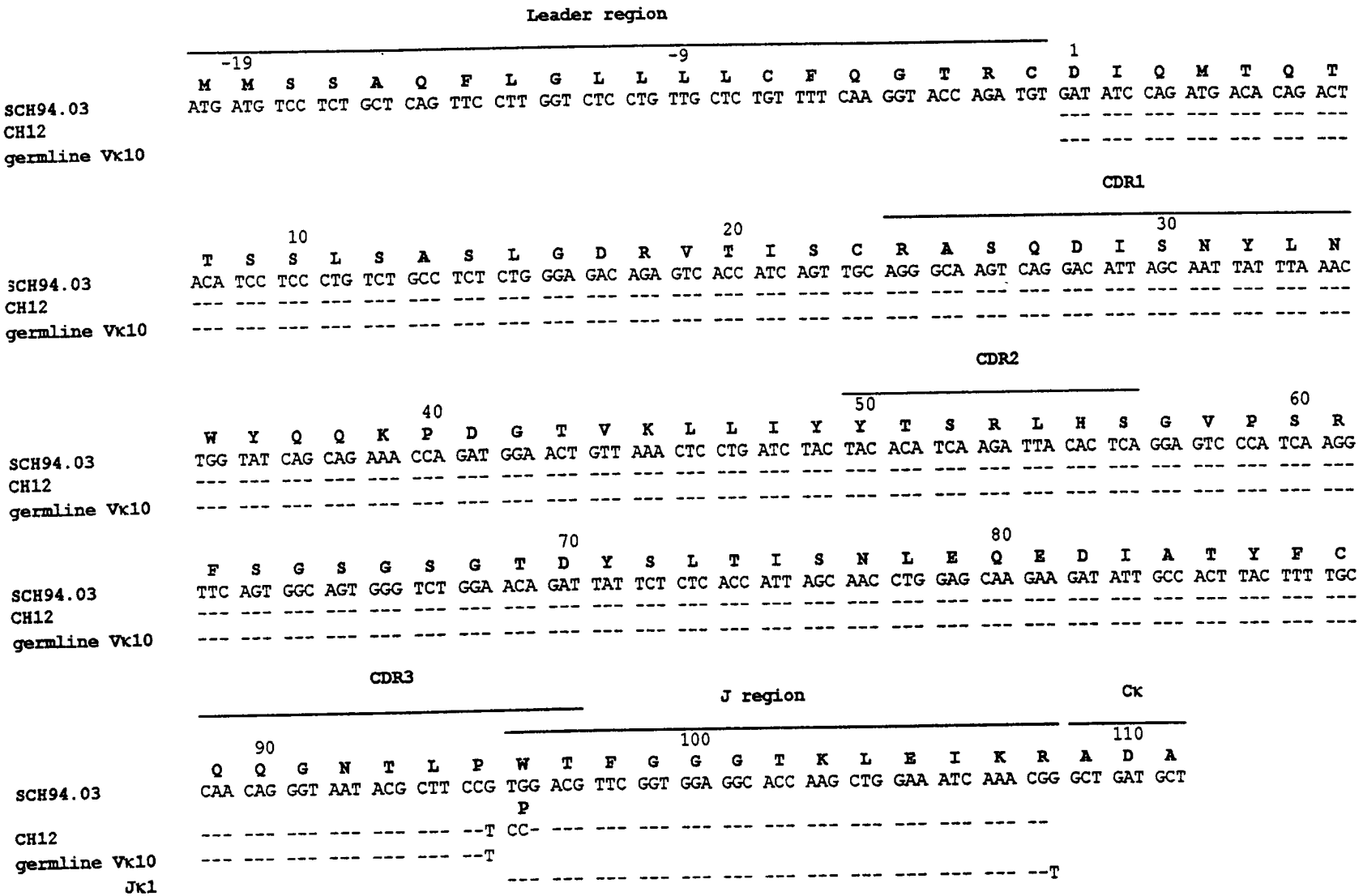


FIG. 11B

Immunoglobulin Heavy Chain Variable Region Sequence of SCH94.03

Leader region

	-19									-9									1							
	M	G	W	S	C	I	I	L	F	L	V	A	A	A	T	G	V	H	S	Q	V	Q	L	Q	Q	P	G
SCH94.03	ATG	GGA	TGG	AGC	TGT	ATC	ATC	CTC	TTT	TTG	GTA	GCA	GCA	GCT	ACA	GGT	GTC	CAC	TCC	CAG	GTC	CAA	CTG	CAG	CAG	CCT	GGG
CH12																				---	---	---	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR1

		10										20									30							
	T	E	L	V	K	P	G	A	S	V	K	L	S	C	K	A	S	G	Y	T	F	T	S	Y	W	M	H
SCH94.03	ACT	GAA	CTG	GTG	AAG	CCT	GGG	GCT	TCA	GTG	AAG	CTG	TCC	TGC	AAG	GCT	TCT	GGC	TAC	ACC	TTC	ACC	AGC	TAC	TGG	ATG	CAC
CH12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
jermline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR2

					40										50		52A								60		
	W	V	K	Q	R	P	G	Q	G	L	E	W	I	G	N	I	N	P	S	N	G	G	T	N	Y	N	E
SCH94.03	TGG	GTG	AAG	CAG	AGG	CCT	GGA	CAA	GGC	CTT	GAG	TGG	ATT	GGA	AAT	ATT	AAT	CCT	AGC	AAT	GGT	GGT	ACT	AAC	TAC	AAT	GAG
CH12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR2

									70									80			82A	82B	82C			
	K	F	K	S	K	A	T	L	T	V	D	K	S	S	S	T	A	Y	M	Q	L	S	S	L	T	S	E
SCH94.03	AAG	TTC	AAG	AGC	AAG	GCC	ACA	CTG	ACT	GTA	GAC	AAA	TCC	TCC	AGC	ACA	GCC	TAC	ATG	CAG	CTC	AGC	AGC	CTG	ACA	TCT	GAG
CH12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR3

N region | **D region** | **N region** | **J region**

					90												100	100A	100B				100C	100D				
	D	S	A	V	Y	Y	C	A	R	R	A		P	Y	Y	G	S	R				N	F	D	Y	W	G
SCH94.03	GAC	TCT	GCG	GTC	TAT	TAT	TGT	GCA	AGA	CGG	GCC	CC	..T	TAC	TAC	GGT	AGT	AGG	...	...	...	AAC	TTT	GAC	TAC	TGG	GGC
													D					S	W	G	Y	Y						
CH12	---	---	---	---	---	---	---	---	---	...	...	..	GA-	---	---	---	---	--C	TGG	GGG	TAC	T--	---	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---													T--	---	---	---	---	---	---
J_H2																												

J region | **Cμ**

						110					
	Q	G	T	T	L	T	V	S	S	E	S	Q
SCH94.03	CAA	GGC	ACC	ACT	CTC	ACA	GTC	TCC	TCA	GAG	AGT	CAG
CH12	---	---	---	---	---	---	---	---	---			
germline J_H2	---	---	---	---	---	---	---	---	---			

FIG. 12


SEP 25 2002
PATENT & TRADEMARK OFFICE

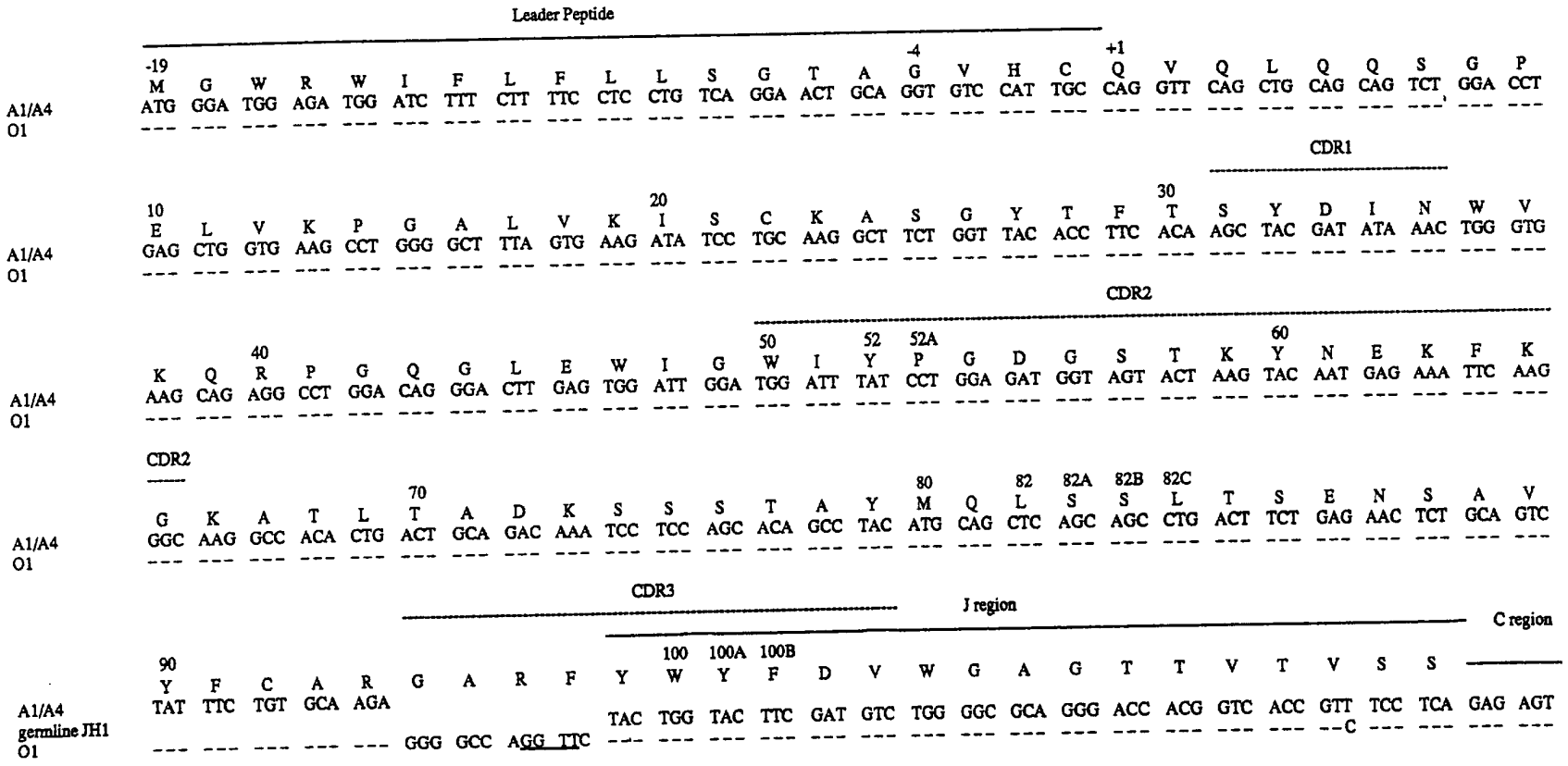

Leader Peptide
CDR1
CDR2
CDR2
CDR3
J region
C region
A1/A4
O1
A1/A4
germline JH1
O1

FIG. 13


PATENT & TRADEMARK OFFICE
SEP 25 2002

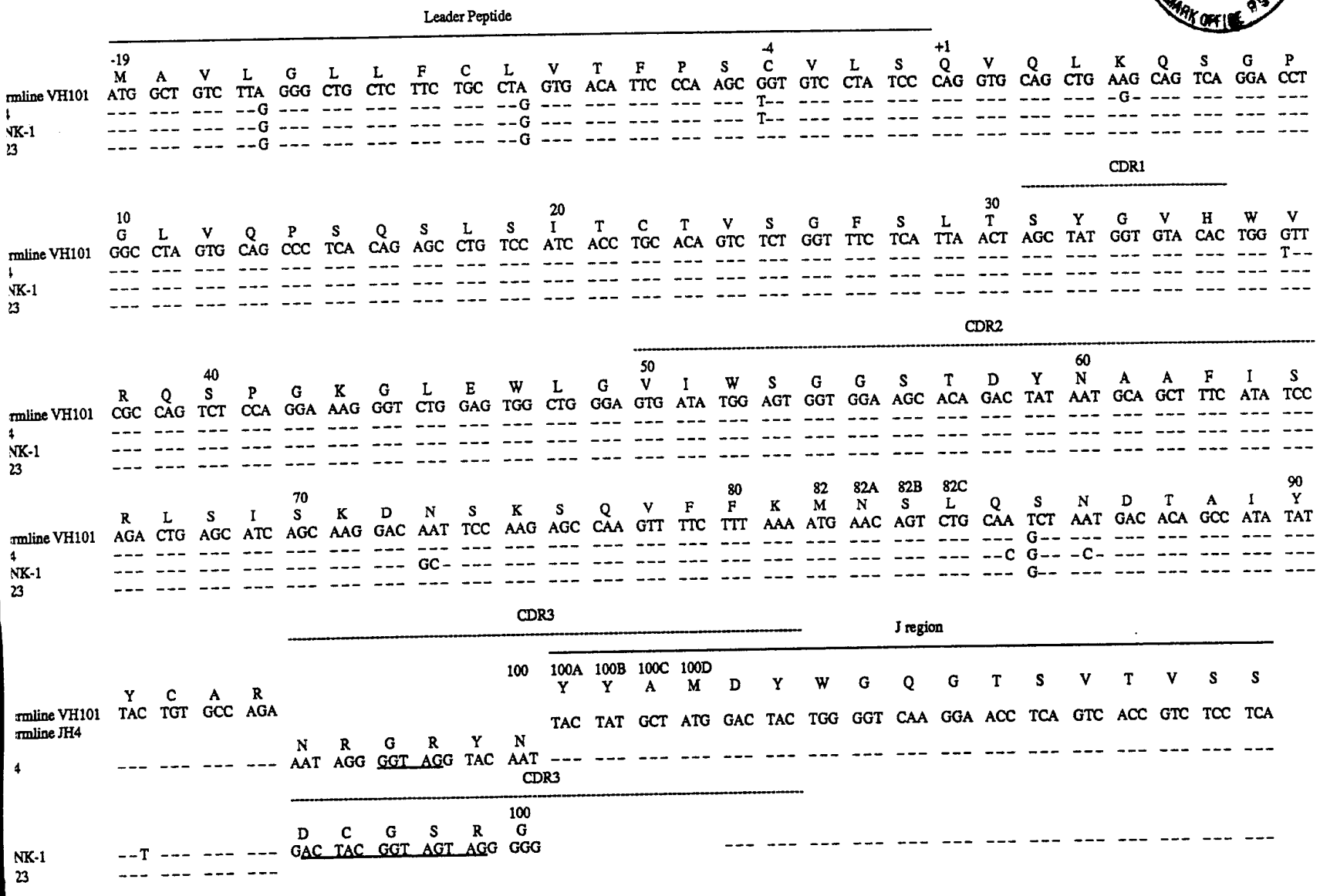

Leader Peptide
CDR1
CDR2
CDR3
J region
rmline VH101
rmline JH4
NK-1
23

FIG. 14


SEP 25 2002
TRADEMARK OFFICE

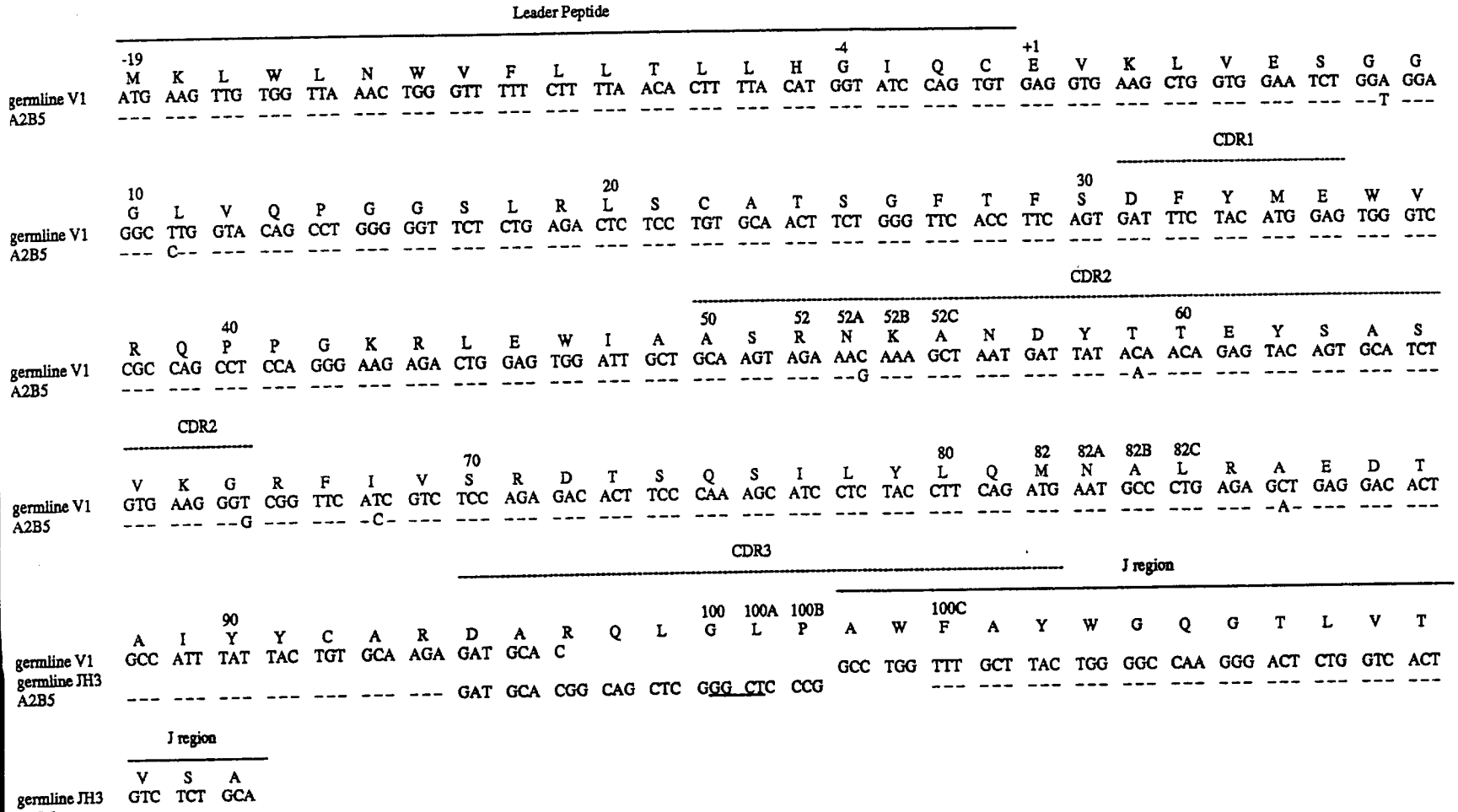

Leader Peptide
CDR1
CDR2
CDR2
CDR3
J region
J region
germline V1
A2B5
germline V1
A2B5
germline V1
A2B5
germline V1
A2B5
germline V1
germline JH3
A2B5
germline JH3
A2B5

FIG. 15


PATENT & TRADEMARK OFFICE
SEP 25 2002
JC68

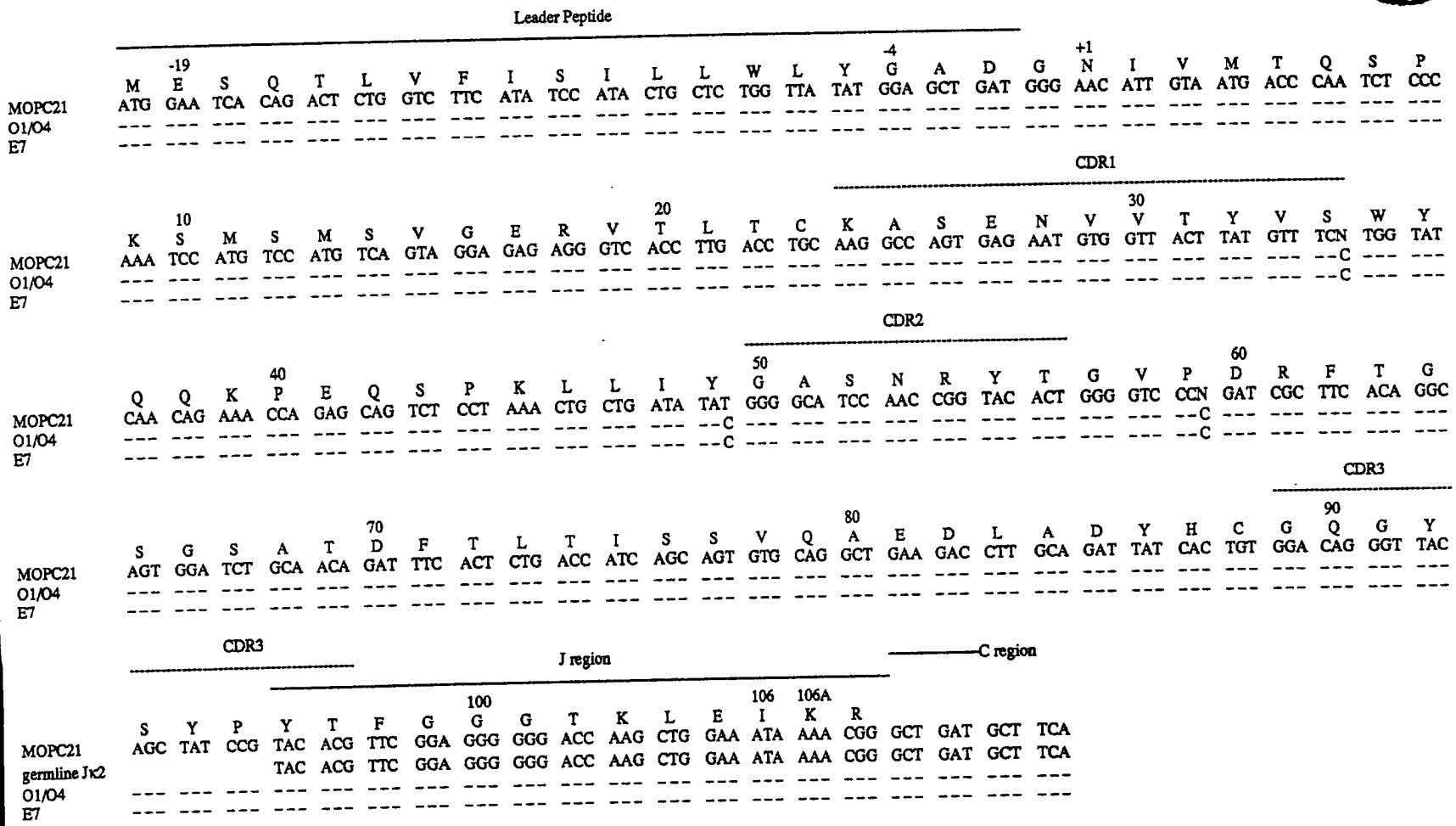

Leader Peptide
CDR1
CDR2
CDR3
CDR3
J region
C region
MOPC21
germline Jκ2
O1/O4
E7

FIG. 16

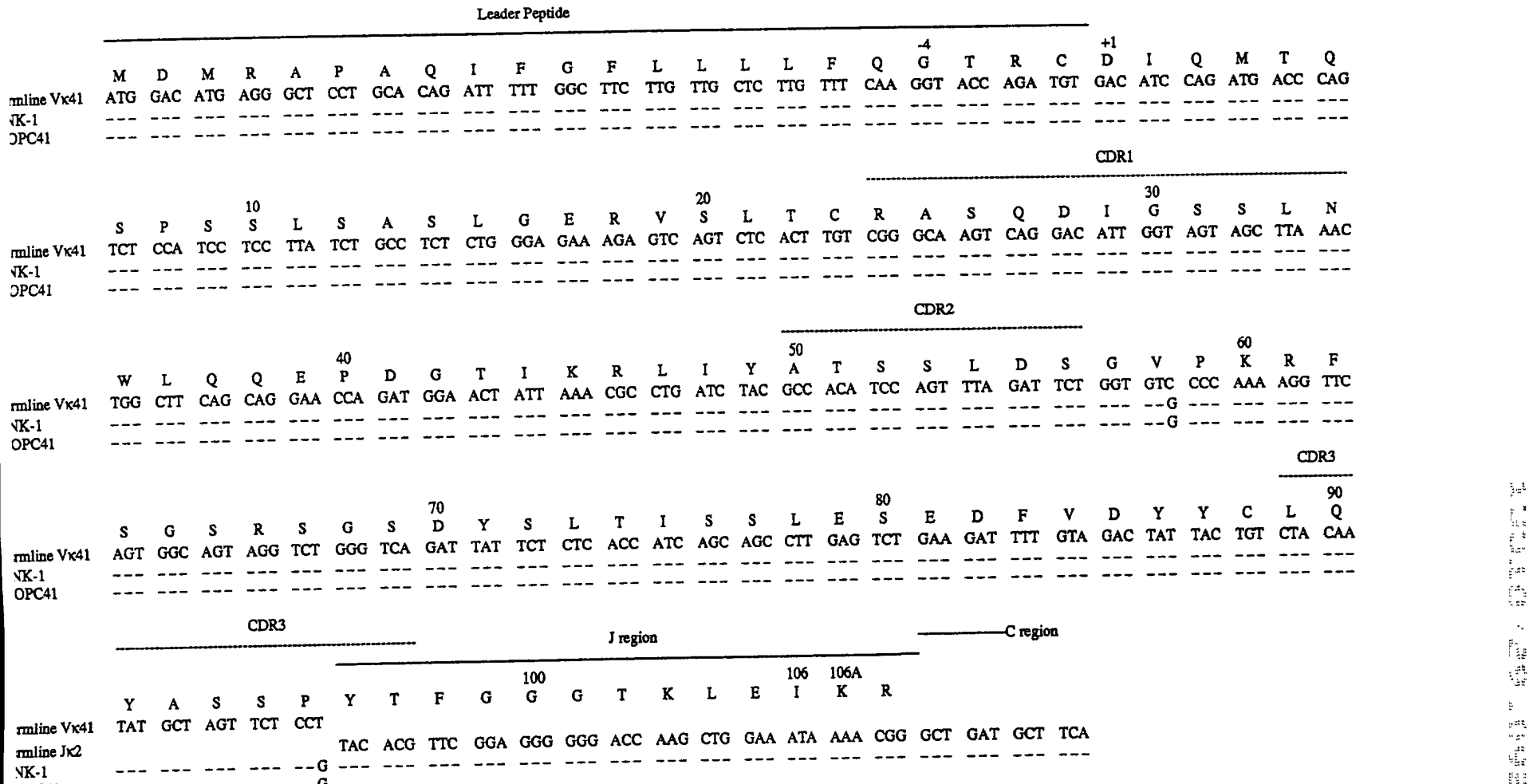

Leader Peptide
CDR1
CDR2
CDR3
CDR3
J region
C region
germline Vκ41
NK-1
OPC41
germline Jκ2
NK-1
OPC41

FIG. 17

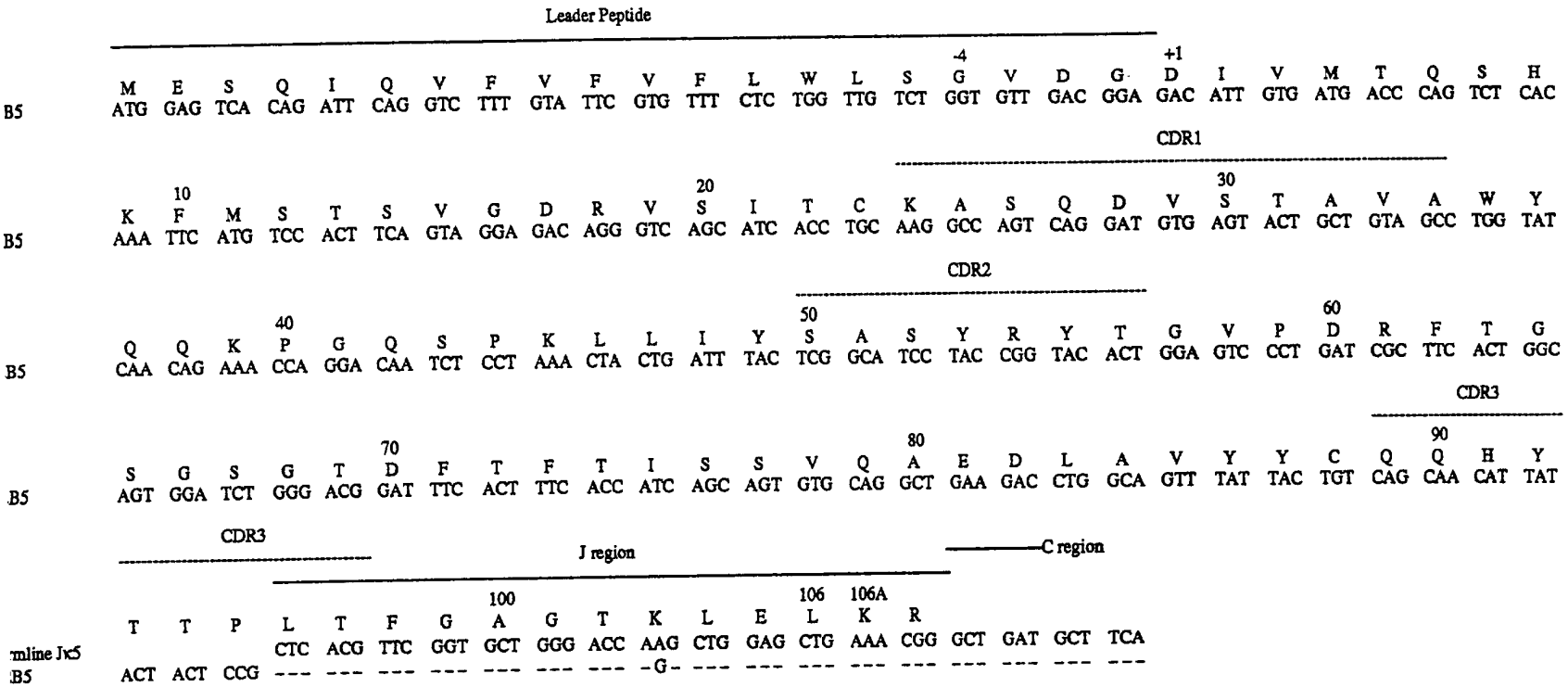


FIG. 18

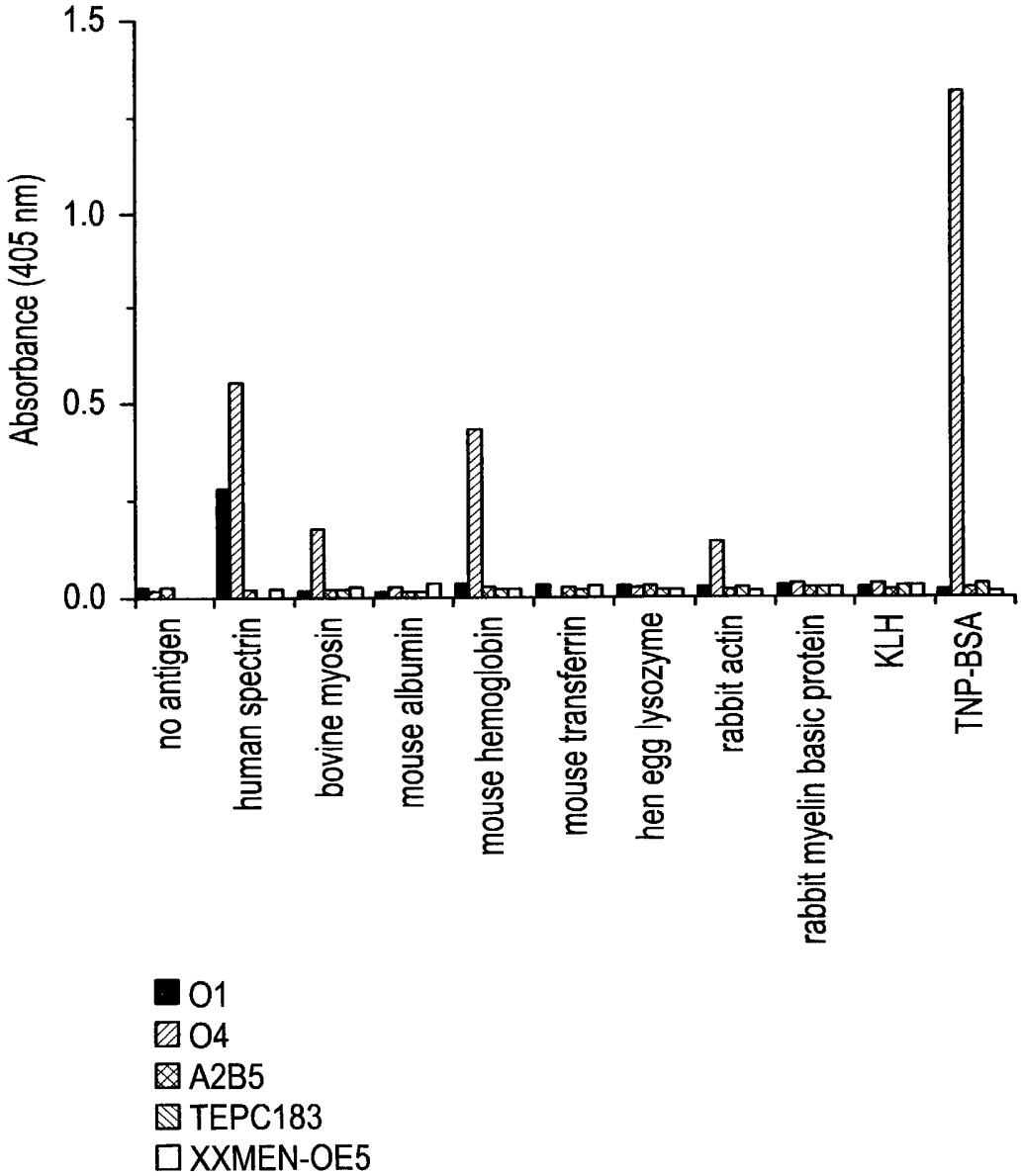


FIG. 19A

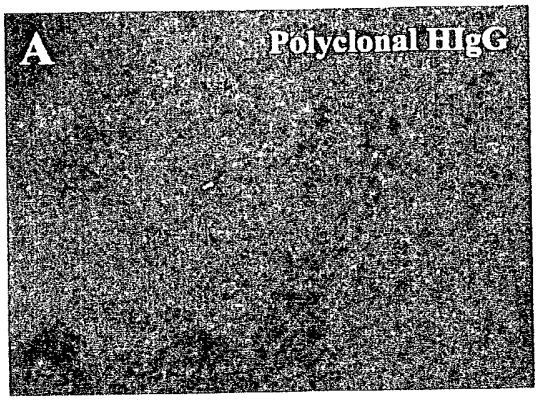


FIG. 19B

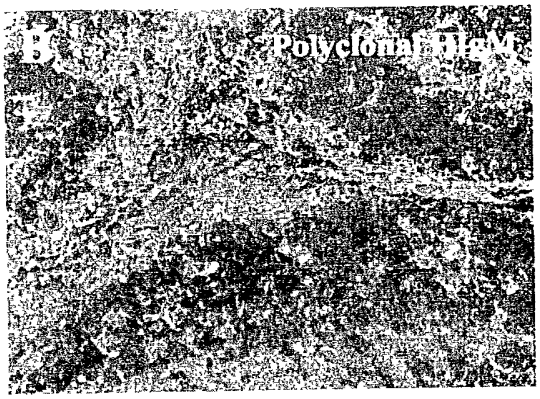


FIG. 19C

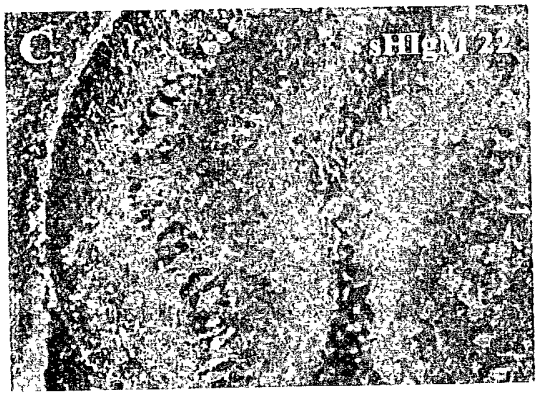


FIG. 19D

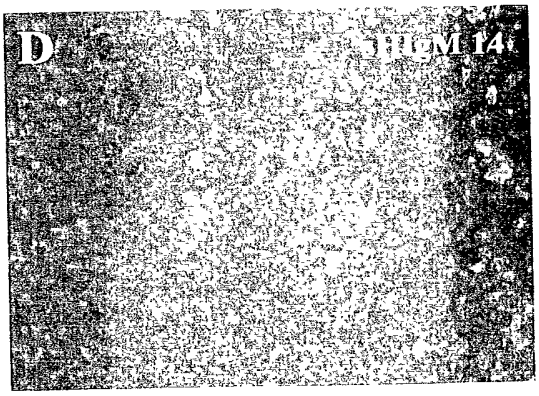


FIG. 19E

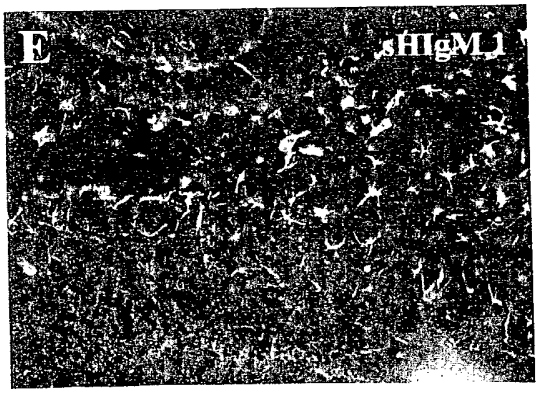


FIG. 19F

FIG. 20A

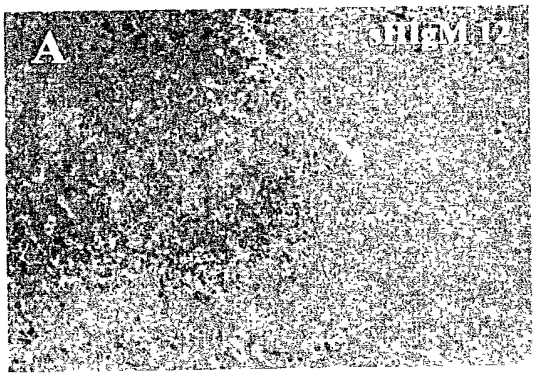


FIG. 20B

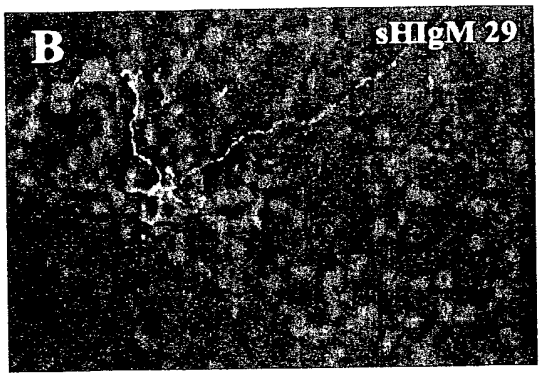


FIG. 20C

FIG. 20D

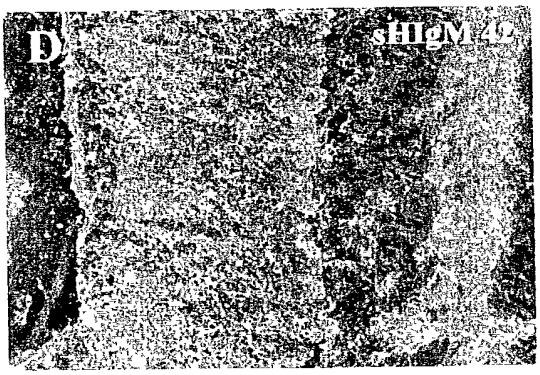


FIG. 20E

FIG. 20F

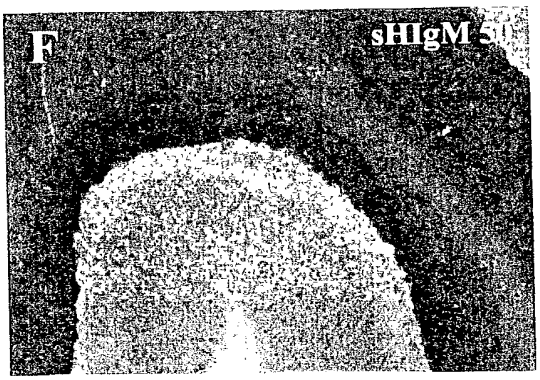


FIG. 21A

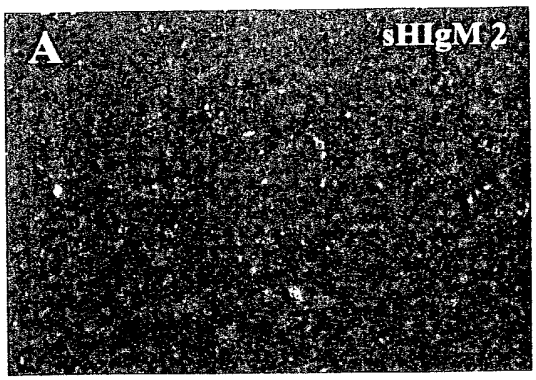


FIG. 21B

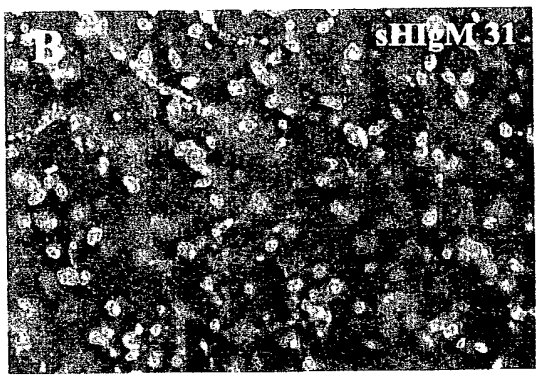


FIG. 21C

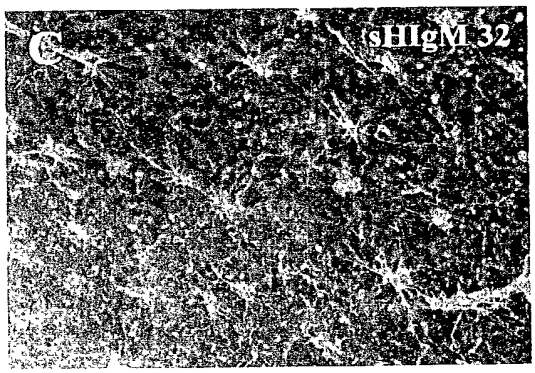


FIG. 21D

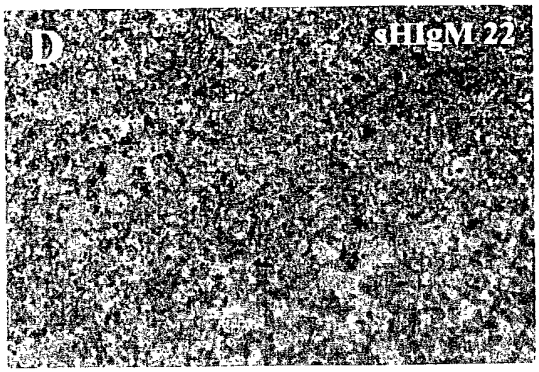


FIG. 21E

FIG. 22A

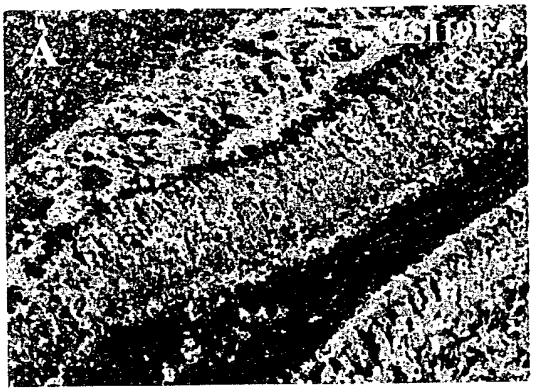


FIG. 22B

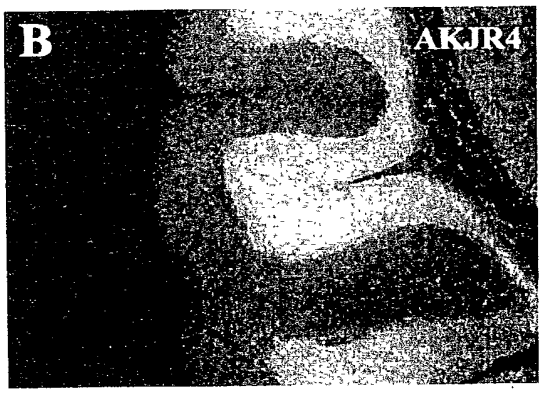


FIG. 22C

FIG. 22D

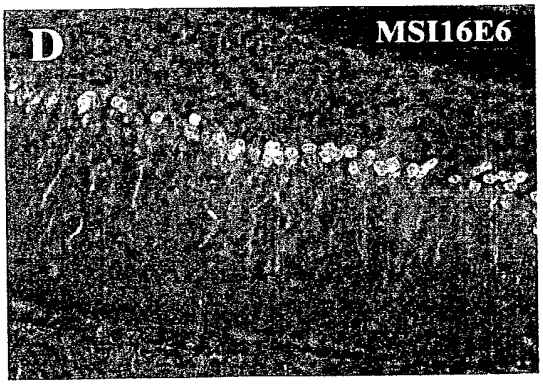


FIG. 22E

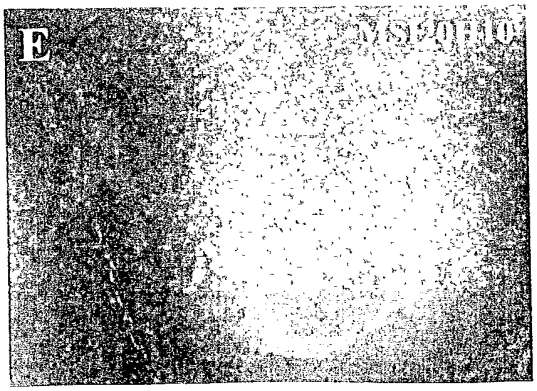


FIG. 22F

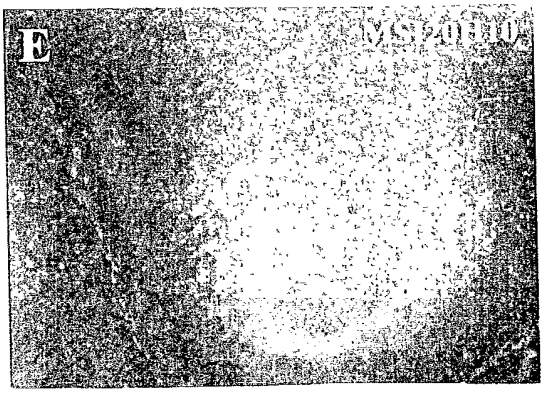


FIG. 23A

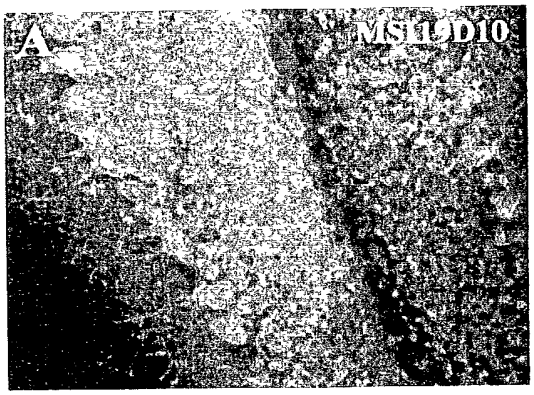


FIG. 23B

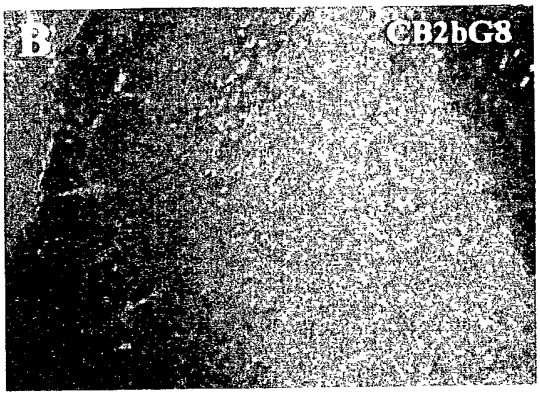


FIG. 23C

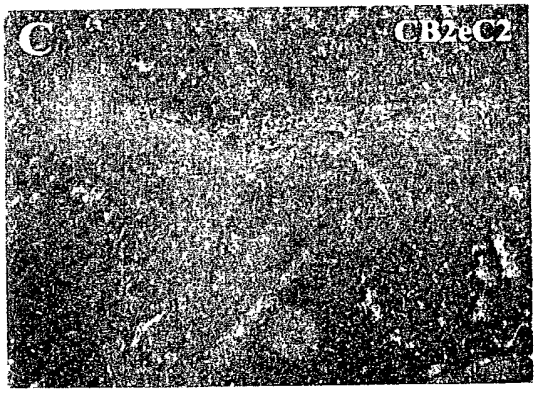


FIG. 23D

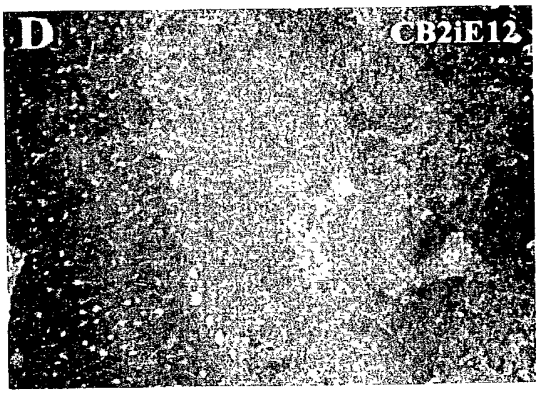


FIG. 23E

FIG. 23F

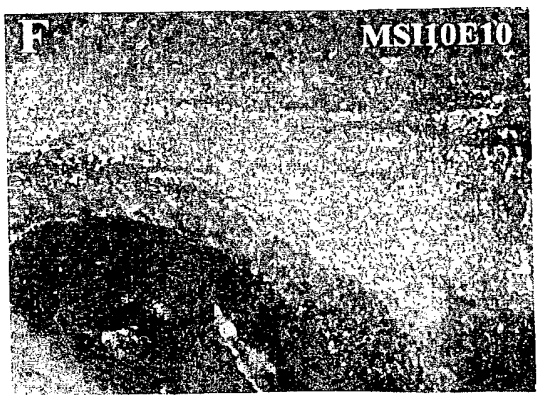
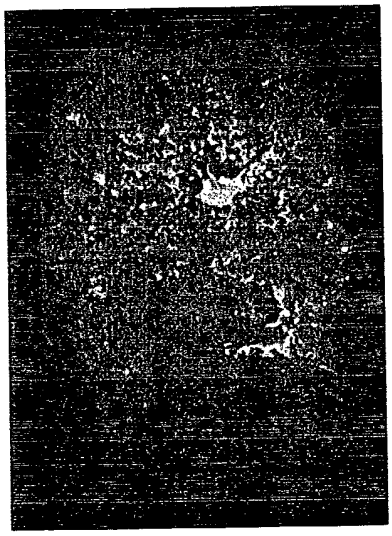
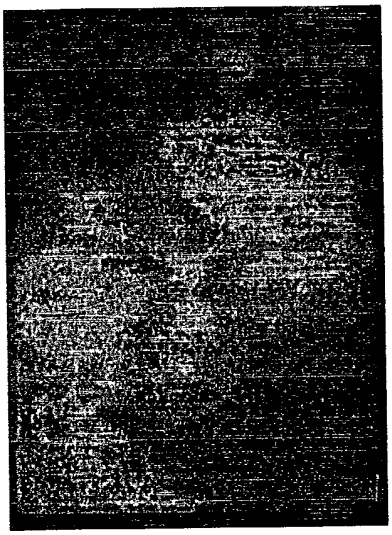


FIG. 24A



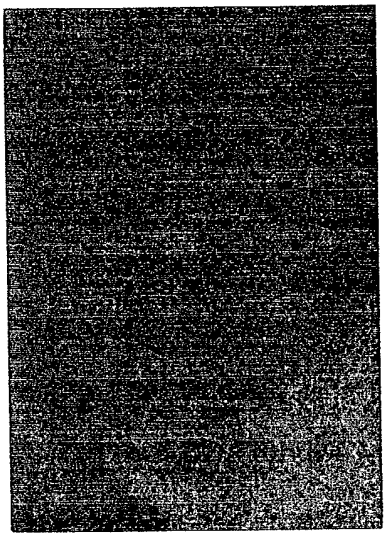
Polyclonal hIgM

FIG. 24B



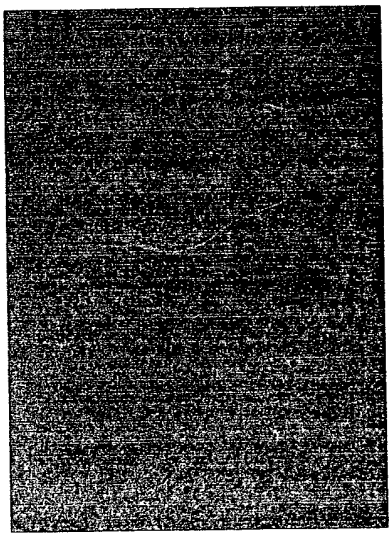
MBP+ 0L

FIG. 24C



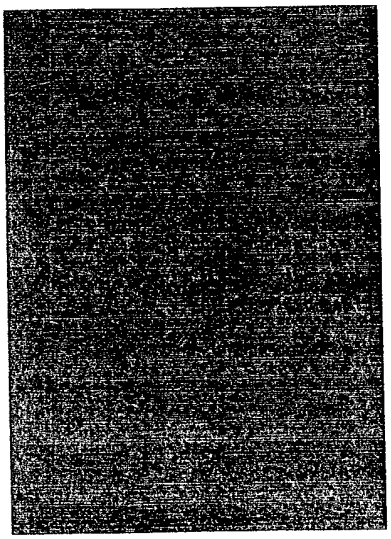
Polyclonal hIgG

FIG. 24D



sHIgM 1

FIG. 24E



sHIgM 2

FIG. 25A

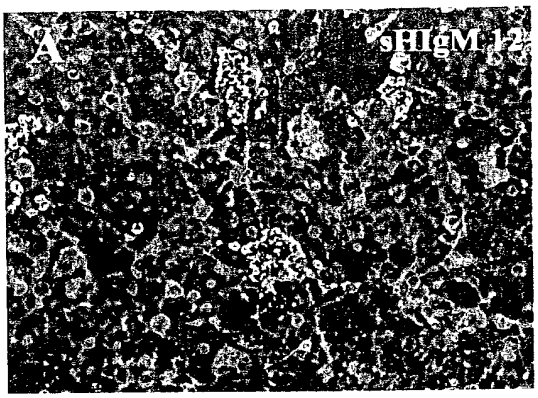


FIG. 25B

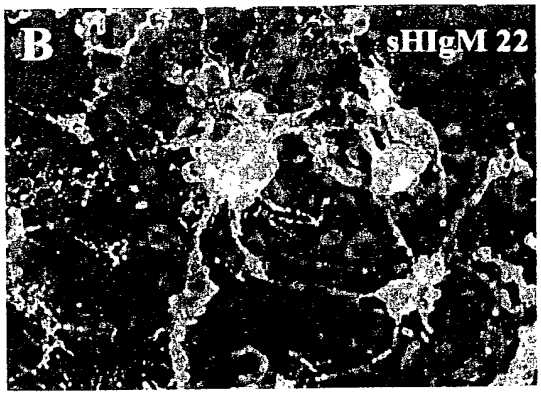


FIG. 25C

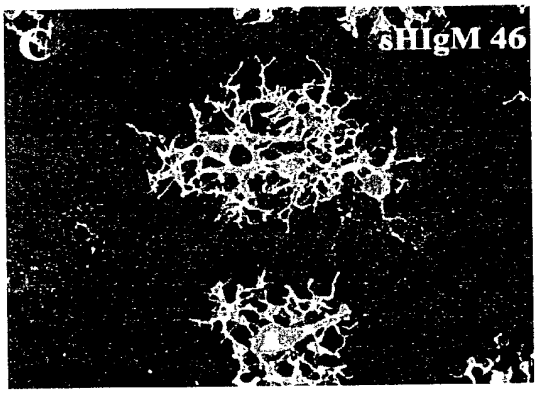


FIG. 25D

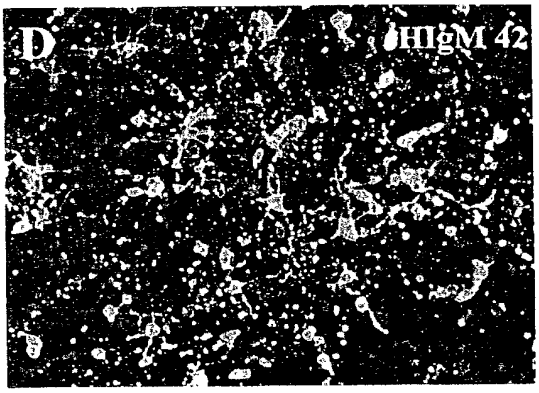


FIG. 25E

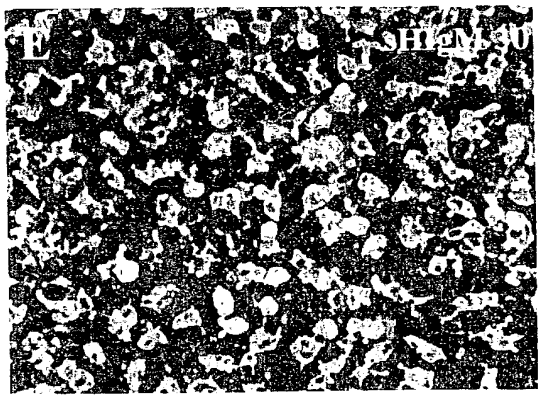


FIG. 25F

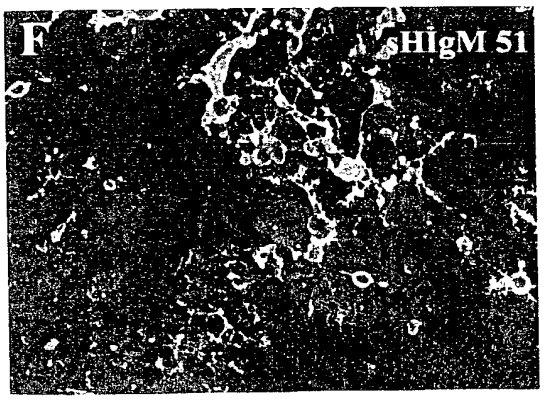


FIG. 26A

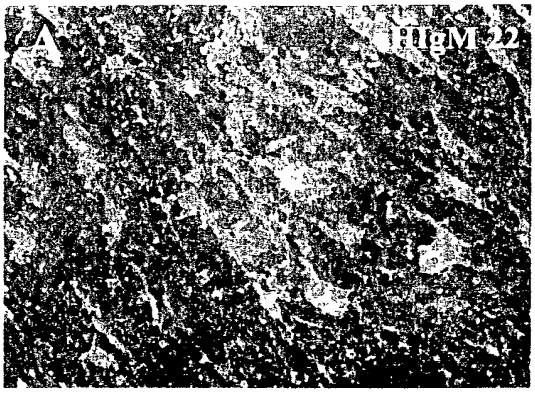


FIG. 26B

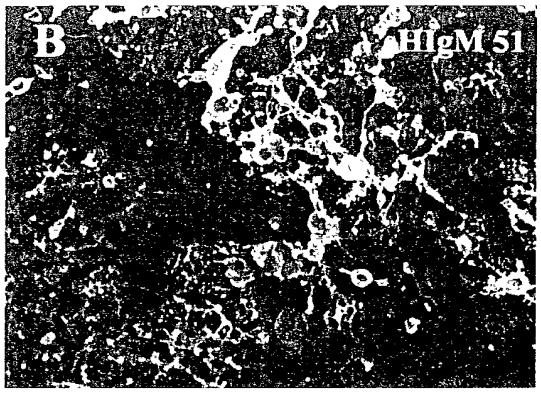


FIG. 26C

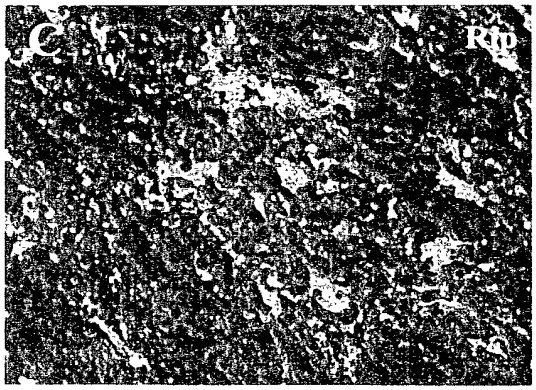


FIG. 26D

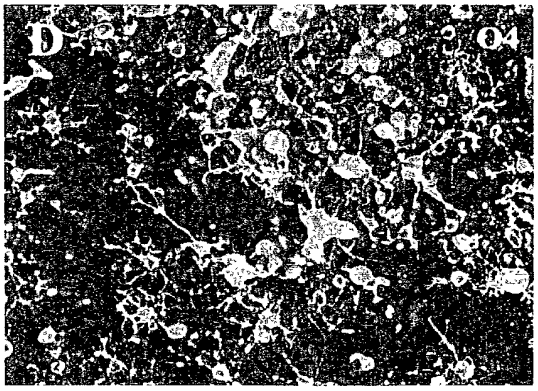


FIG. 26E

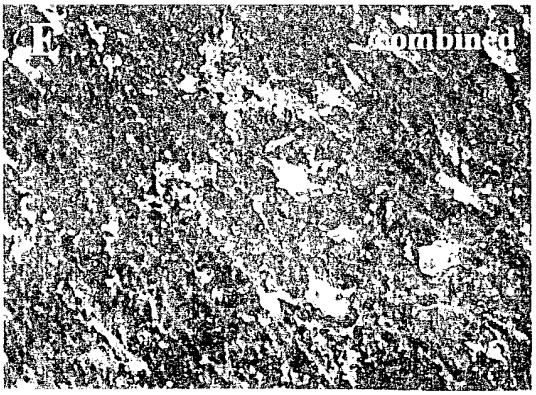


FIG. 26F

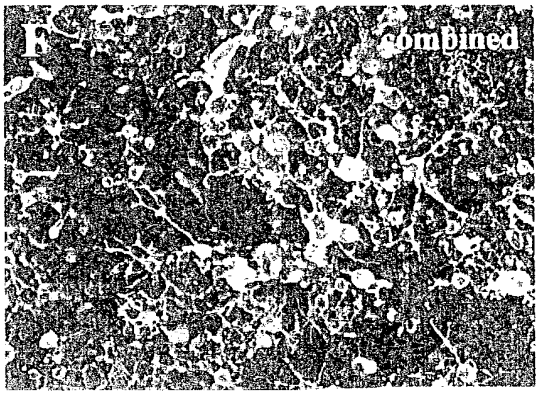


FIG. 27A

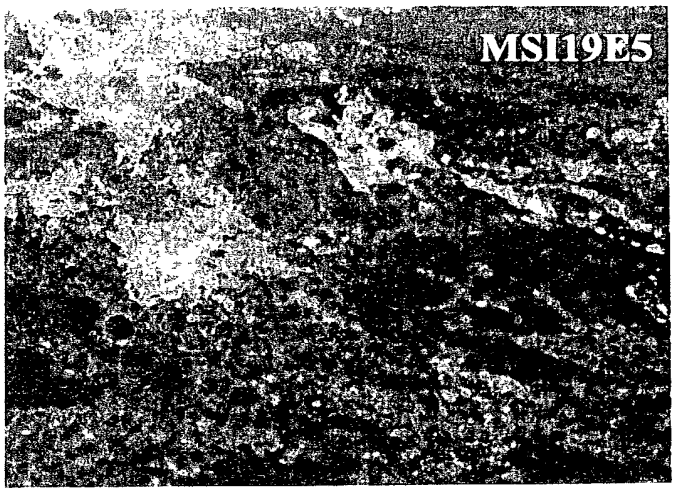


FIG. 27B

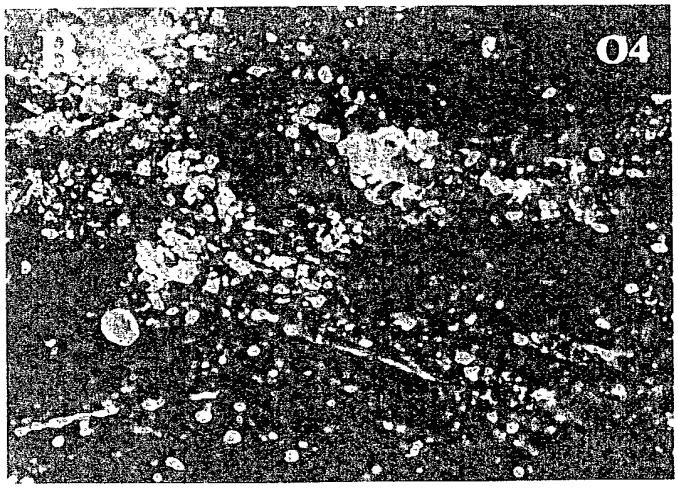


FIG. 27C

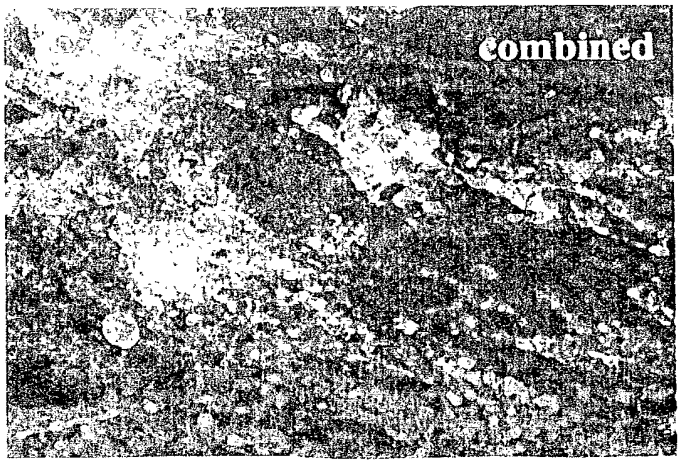


FIG. 29

ebvHIgMs Characterized by Binding to SCH via ELISA

FIG. 30A

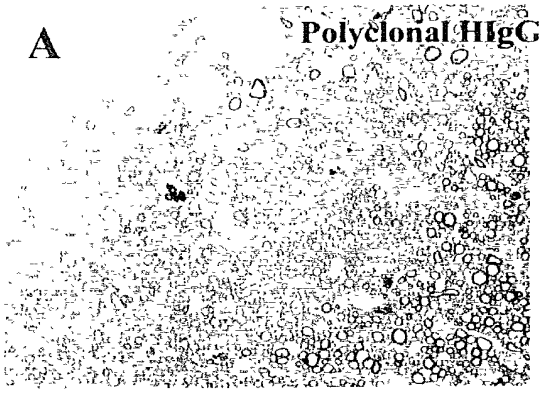


FIG. 30B

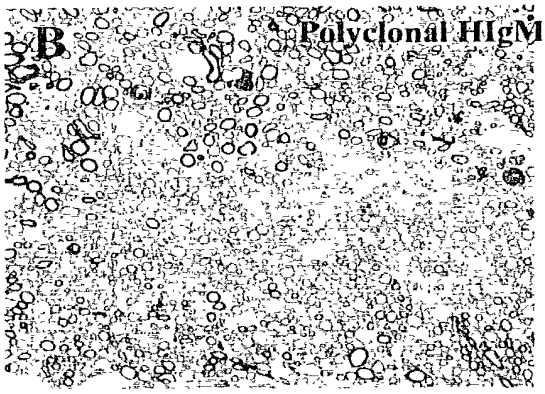


FIG. 30C

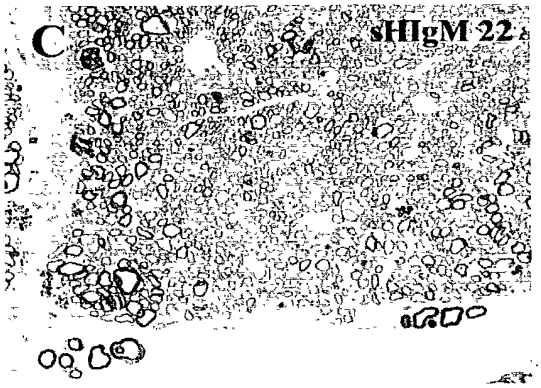


FIG. 30D

FIG. 30E

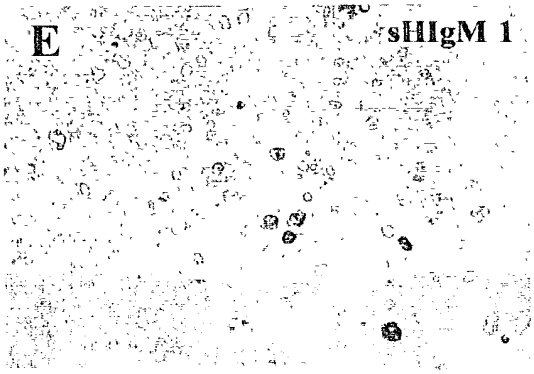


FIG. 30F

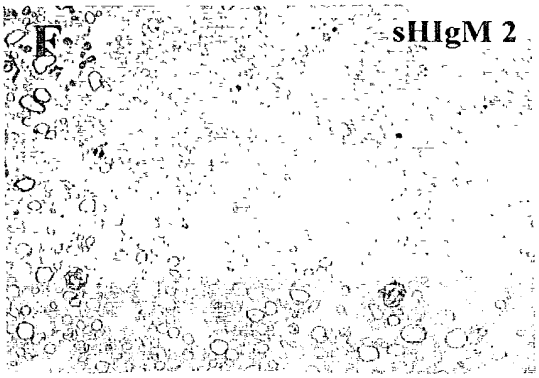


FIG. 31A

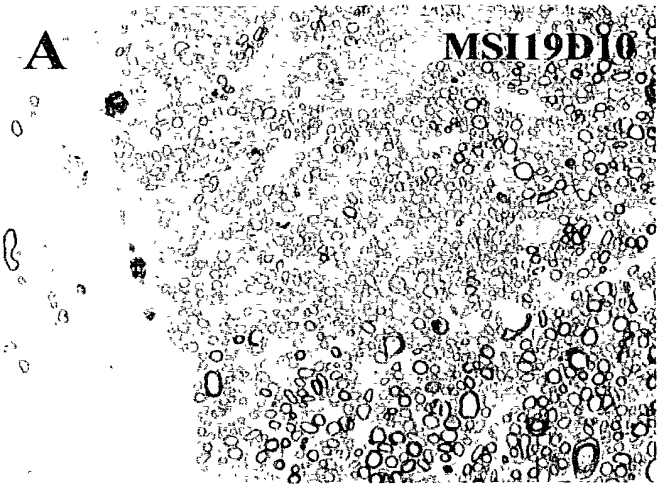


FIG. 31B

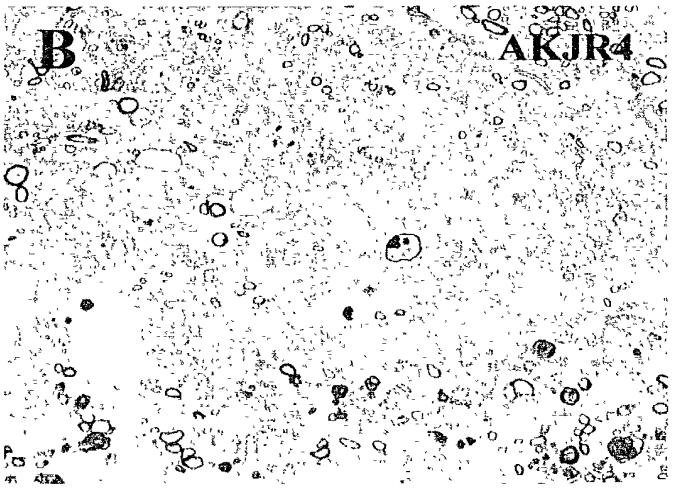
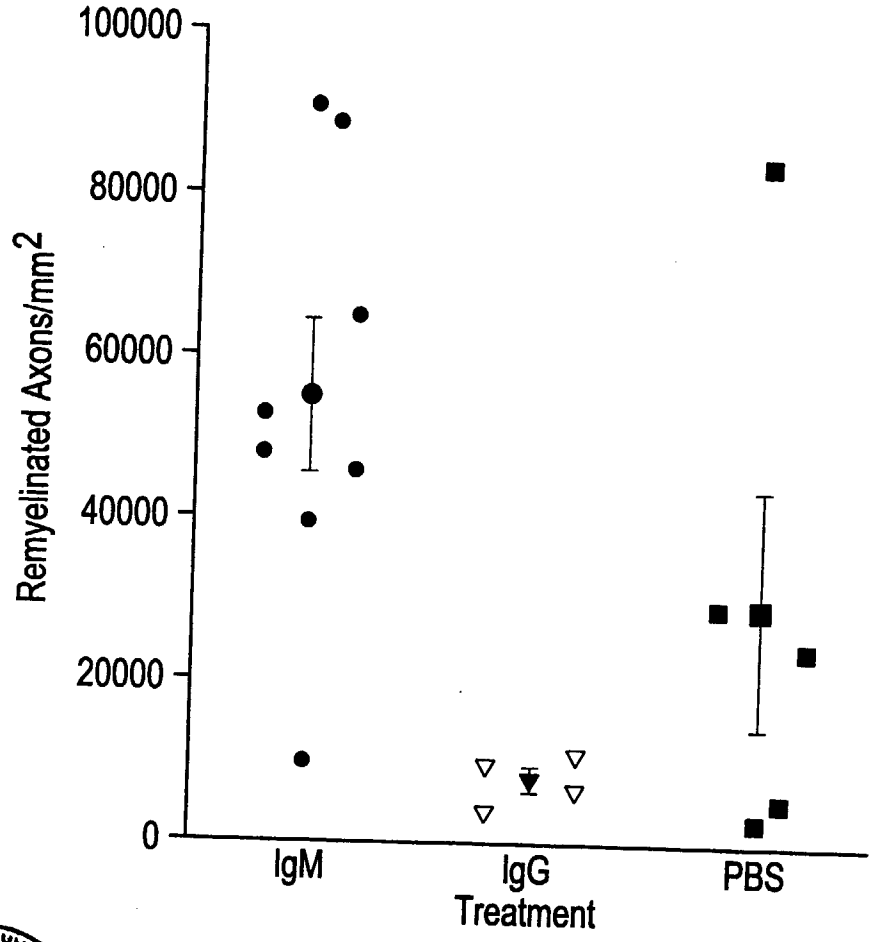


FIG. 32

Lysolecithin Experiment 21 Day Experiment



ANIMAL #	STRAIN	RX	DAY RX	Axons/mm^2
1091-98	SJL	HUMAN IGM	7	47881.04
1093-98	SJL	HUMAN IGM	7	90745.80
1094-98	SJL	HUMAN IGM	7	88638.09
1095-98	SJL	HUMAN IGM	7	52767.82
1181-98	SJL	HUMAN IGM	7	45583.42
1182-98	SJL	HUMAN IGM	7	39289.31
1183-98	SJL	HUMAN IGM	7	64636.39
1184-98	SJL	HUMAN IGM	7	9937.24
Mean				**54934.89**
SEM				**9376.95**
1135-98	SJL	HUMAN IGG	7	9433.96
1139-98	SJL	HUMAN IGG	7	3702.92
1140-98	SJL	HUMAN IGG	7	11028.19
1141-98	SJL	HUMAN IGG	7	6493.06
Mean				**7664.53**
SEM				**1620.49**
1122-98	SJL	PBS	7	2457.22
1124-98	SJL	PBS	7	23746.34
1170-98	SJL	PBS	7	83549.17
1171-98	SJL	PBS	7	4819.92
1172-98	SJL	PBS	7	28878.82
Mean				**28690.29**
SEM				**14649.14**

FIG. 33

Hapten Elisa

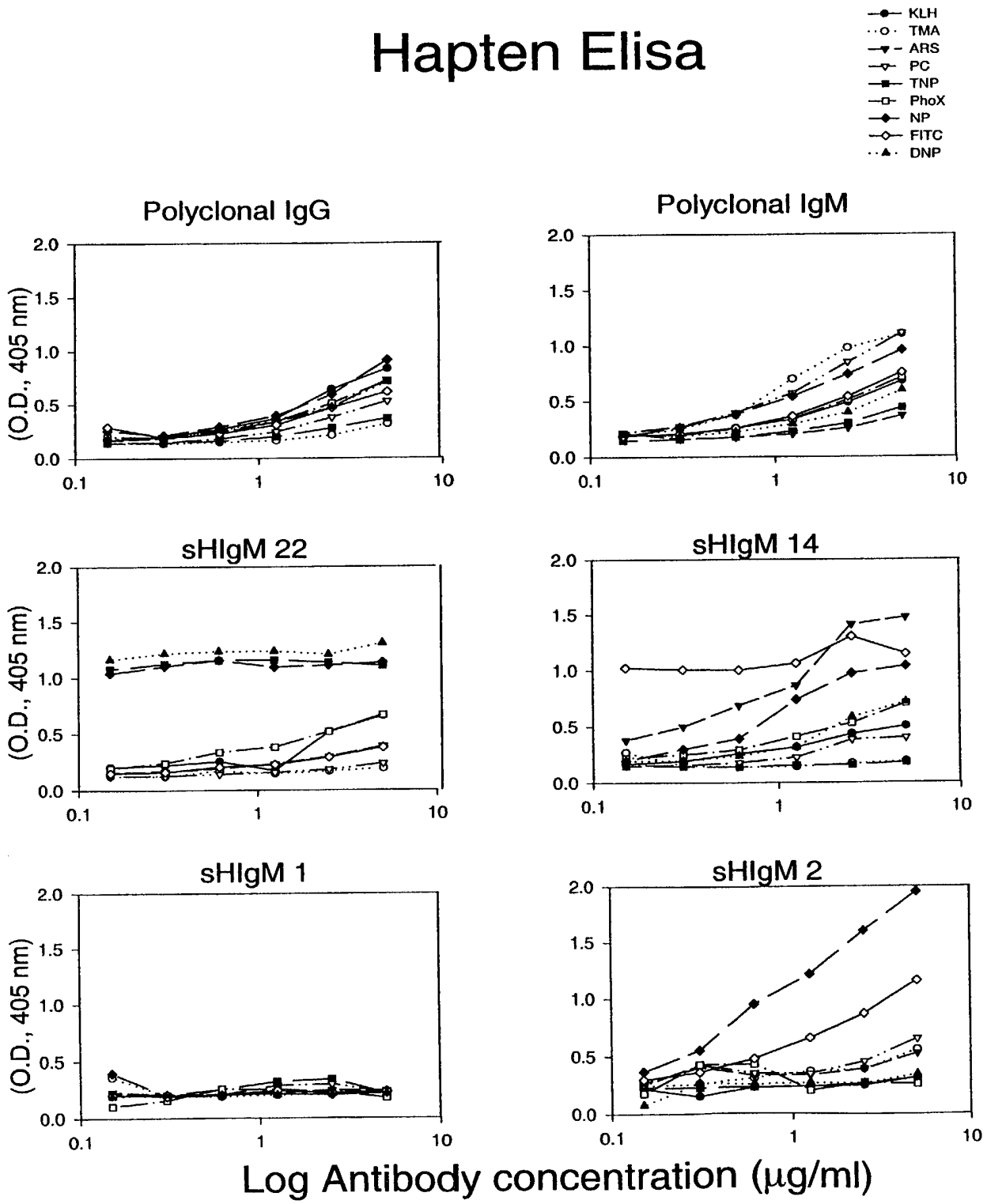


FIG. 34

Protein Elisa

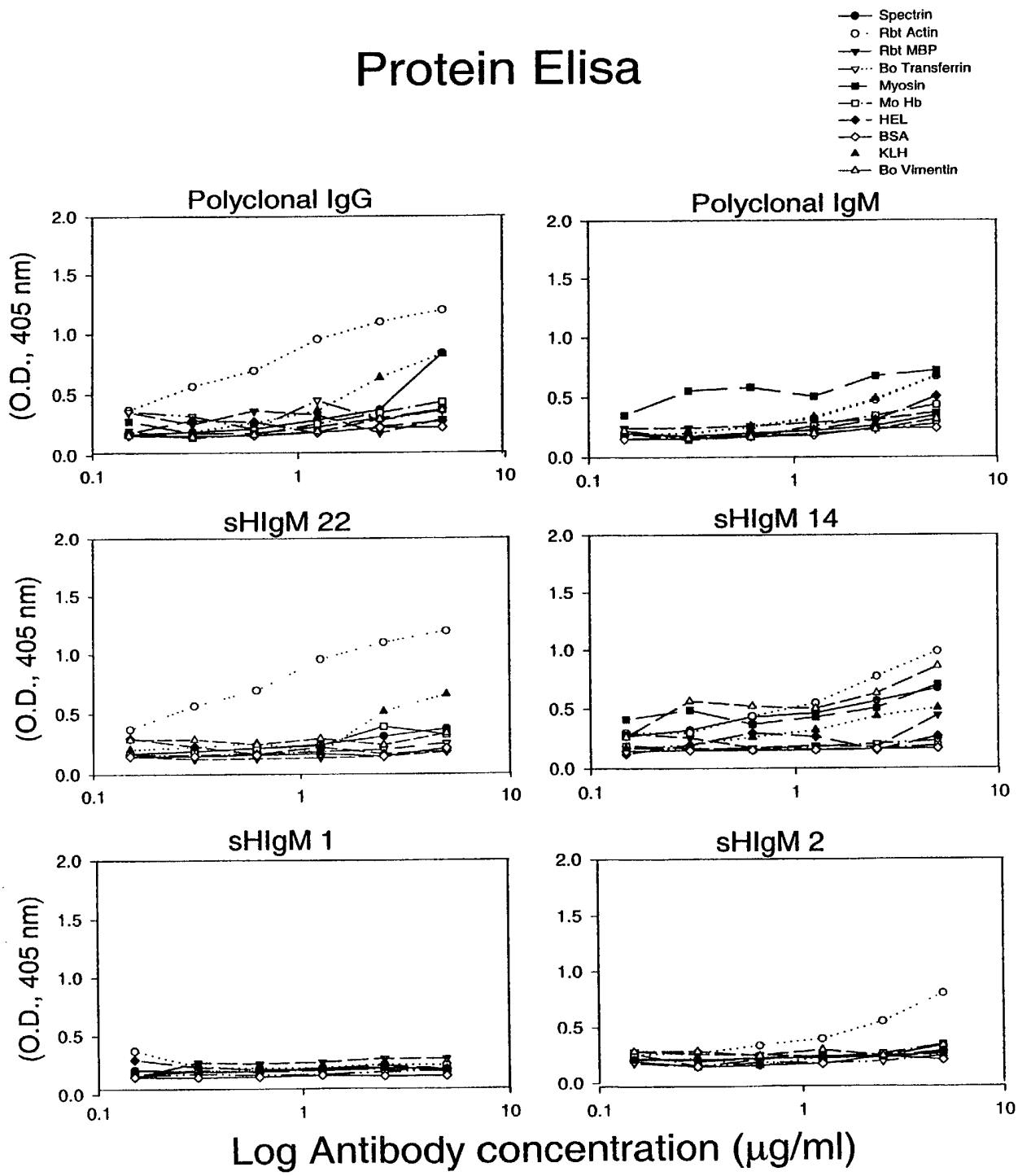


FIG. 35

```
/FR1-------------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10   11  12  13  14  15
 Q   V   Q   L   V   E   S   G   G   G   V   V   Q   P   G
CAG GTG CAG CTG GTG GAG TCT GGG GGA GGC GTG GTC CAG CCT GGG
Clone A sH-IgM.22 VH                   G
Clone B sH-IgM.22 VH
-------------------------------------------------------------
 16  17  18  19  20  21  22  23  24  25  26  27  28  29  30
 R   S   L   R   L   S   C   A   A   S   G   F   T   F   S
AGG TCC CTG AGA CTC TCC TGT GCA GCC TCT GGA TTC ACC TTC AGT


/CDR1---------------/FR2-----------------------------------------
 31  32  33  34  35  36  37  38  39  40  41  42  43  44  45
 S   S   G   M   H   W   V   R   Q   A   P   G   K   G   L
AGC TAT GGC ATG CAC TGG GTC CGC CAG GCT CCA GGC AAG GGG CTG
     C                       A
     C
---------------/CDR2-----------------------------------------
 46  47  48  49  50  51  52 52A  53  54  55  56  57  58  59
 E   W   V   A  V(I) I   S   Y   D   G   S   R   K   Y   Y
GAG TGG GTG GCA GTT ATA TCA TAT GAT GGA AGT AAT AAA TAC TAT
                    T                       GG
                A C T                       GG
----------------------/FR3-----------------------------------
60  61  62  63  64  65  66  67  68  69  70  71  72  73  74
A   D   S   V   K   G   R   F   T   I   S   R   D   N   S
GCA GAC TCC GTG AAG GGC CGA TTC ACC ATC TCC AGA GAC AAT TCC
                                                    C
                                                    C
-------------------------------------------------------------
 75  76  77  78  79  80  81  82 82A 82B 82C  83  84  85  86
 K   N   T   L   Y   L   Q   M   N   S   L   T   A  D(E) D
AAG AAC ACG CTG TAT CTG CAA ATG AAC AGC CTG AGA GCT GAG GAC
          T                                 CG        C
          T   C                             C
-------------------------------/CDR3-----------------------
 87  88  89  90  91  92  93  94  95  96  97  98  99 100100A
 T   A   V   Y   Y   C   A   K   G   V   T   G   S   P   T
ACG GCT GTG TAT TAC TGT GCG AAA GAG GTG ACT GCT ATT CCC TAC
                    T           GA          G   G   G ACG
                                GA          G   G   G ACG
-----------/FR4-------------------------------------------------
100B101 102 103 104 105 106 107 108 109 110 111 112 113
 L   D   Y   W   G   Q   G   T   L   V   T   V   S   S
TTT GAC TAC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA
C                                                   G
C                                                   G
```

FIG. 36

```
/FR1-------------------------------------------------------------
 1   2   3   4   5   6   7   8   9   11  12  13  14  15  16
 Q   S   V   L   T   Q   P   P   S   V   S   A   A   P   G
CAG TCT GTG TTG ACG CAG CCG CCC TCA GTG TCT GCG GCC CCA GGA
Clone I sH-IgM.22 Vλ      G       T               T
Clone II sH-IgM.22 Vλ     G       T               T
-------------------------/CDR1-----------------------------
 17  18  19  20  21  22  23  24  25  26  27  27A 27B 28  29
 Q   K   V   T   I   S   C   S   G   S   S   S   N   I   G
CAG AAG GTC ACC ATC TCC TGC TCT GGA AGC AGC TCC AAC ATT GGG
                                                    C
                                                    C
--------------------/FR2-------------------------------------
 30  31  32  33  34  35  36  37  38  39  40  41  42  43  44
 N   N   F   V   S   W   Y   Q   Q   L   P   G   T   A   P
AAT AAT TAT GTA TCC TGG TAC CAG CAG CTC CCA GGA ACA GCC CCC
          T                   A
          T                   A
--------------------/CDR2-------------------------/FR3--------
 45  46  47  48  49  50  51  52  53  54  55  56  57  58  59
R(K) L   L   I   Y   D   I   T   K   R   P   S   G   I   P
AAA CTC CTC ATT TAT GAC AAT AAT AAG CGA CCC TCA GGG ATT CCT
 G                      T   C
                        T   C
-------------------------------------------------------------
 60  61  62  63  64  65  66  67  68  69  70  71  72  73  74
 D   R   F   S   G   S   K   S   G   T   S   A   T   L   G
GAC CGA TTC TCT GGC TCC AAG TCT GGC ACG TCA GCC ACC CTG GGC

-------------------------------------------------------/CDR3
 75  76  77  78  79  80  81  82  83  84  85  86  87  88  89
 I   T   G   L   Q   T   G   D   E   A   D   Y   Y   C  G(E)
ATC ACC GGA CTC CAG ACT GGG GAC GAG GCC GAT TAT TAC TGC GGA

                                                        A
-------------------------------------/FR4-----------------
 90  91  92  93  94  95 95A 95B  96  97  98  99 100 101 102
 T   W   D   S   S   L   S   A   V   V   F   G   G   G   T
ACA TGG GAT AGC AGC CTG ... ..T GTG GTA TTC GGC GGA GGG ACC
                        AGT GC                  G
                        AGT GC                  G
----------------------/Cλ----------
103 104 105 106 106A107 108 109 110
 K   L   T   V   L   G   Q   P   K
AAG CTG ACC GTC CTA GGT CAG CCC AAG
```

FIG. 37

Sequence of MSI 19-D10 VH

```
FR1-------------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16
CAG GTG CAG CTG CAG GAG TCG GGC CCA GGA CTG GTG AAG CCT TCG GAG
 Q   V   Q   L   Q   E   S   G   P   G   L   V   K   P   S   E

-----------------------------------------------------------/CDR1
17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
ACC CTG TCC CTC ACC TGC ACT GTC TCT GGT GGC TCC ATC AGT AGT
 T   L   S   L   T   C   T   V   S   G   G   S   I   S   S

---------------/FR2-----------------------------------------
32  33  34  35  36  37  38  39  40  41  42  43  44  45  46
TAC TAC TGG AGC TGG ATC CGG CAG CCC CCA GGG AAG GGA CTG GAG
 Y   Y   W   S   W   I   R   Q   P   P   G   K   G   L   E

-----------/CDR2-------------------------------------------
47  48  49  50  51  52  53  54  55  56  57  58  59  60  61
TGG ATT GGG TAT ATC TAT TAC AGT GGG AGC ACC AAC TAC AAC CCC
 W   I   G   Y   I   Y   Y   S   G   S   T   N   Y   N   P

---------------/FR3-----------------------------------------
62  63  64  65  66  67  68  69  70  71  72  73  74  75  76
TCC CTC AAG AGT CGA GTC ACC ATA TCA GTA GAC ACG TCC AAG AAC
 S   L   K   S   R   V   T   I   S   V   D   T   S   K   N

-------------------------------------------------------------
77  78  79  80  81  82  82A 82B 82C 83  84  85  86  87  88
CAG TTC TCC CTG AAG CTG AGC TCT GTG ACC GCT GCG GAC ACG GCC
 Q   F   S   L   K   L   S   S   V   T   A   A   D   T   A

----------------------/CDR3---------------------------------
89  90  91  92  93  94  95  96  97  98  99  100 100A100B100C
GTG TAT TAC TGT GCG AGG TCG GCA CAG CAG CAG CTG GTA TAC TAC
 V   Y   Y   C   A   R   S   A   Q   Q   Q   L   V   Y   Y

-----------/FR4-----------------------------------------/Cμ-
100D 101 102 103 104 105 106 107 108 109 110 111 112 113 114
TTT GAC TAC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA GGG
 F   D   Y   W   G   Q   G   T   L   V   T   V   S   S   G
```

FIG. 38

Sequence of MSI 19-D10 Vκ

```
FR 1----------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
GAC ATC GTG ATG ACC CAG TCT CCA GAC TCC CTG GCT GTG TCT CTG
 D   I   V   M   T   Q   S   P   D   S   L   A   V   S   L

------------------------------/CDR1-----------------------
16  17  18  19  20  21  22  23  24  25  26  27  27A 27B 27C
GGC GAG AGG GCC ACC ATC AAC TGC AAG TCC AGC CAG AGT GTT TTA
 G   E   R   A   T   I   N   C   K   S   S   Q   S   V   L

-----------------------------------------/FR2------------
27D 27E 27F 28  29  30  31  32  33  34  35  36  37  38
TAC AGC TCC AAC AAT AAG AAC TAC TTA GCT TGG TAC CAG CAG
 Y   S   S   N   N   K   N   Y   L   A   W   Y   Q   Q

-------------------------------------------/CDR2----------
39  40  41  42  43  44  45  46  47  48  49  50  51  52  53
AAA CCA GGA CAG CCT CCT AAG CTG CTC ATT TAC TGG GCA TCT ACC
 K   P   G   Q   P   P   K   L   L   I   Y   W   A   S   T

-----------/FR3-----------------------------------------------
54  55  56  57  58  59  60  61  62  63  64  65  66  67  68
CGG GAA TCC GGG GTC CCT GAC CGA TTC AGT GGC AGC GGG TCT GGG
 R   E   S   G   V   P   D   R   F   S   G   S   G   S   G

-------------------------------------------------------------
69  70  71  72  73  74  75  76  77  78  79  80  81  82  83
ACA GAT TTC ACT CTC ACC ATC AGC AGC CTG CAG GCT GAA GAT GTG
 T   D   F   T   L   T   I   S   S   L   Q   A   E   D   V

----------------------/CDR3-----------------------------/FR4
84  85  86  87  88  89  90  91  92  93  94  95  96  97  98
GCA GTT TAT TAC TGT CAG CAA TAT TAT AGT ACT CCT CTC ACT TTC
 A   V   Y   Y   C   Q   Q   Y   Y   S   T   P   L   T   F

-----------------------------------/Cκ----------------------
99  100 101 102 103 104 105 106 107 108 109 110 111 112 113
GGC CCT GGG ACC AAA GTG GAT ATC AAA CGA ACT GTG GCT GCA CCA
```

FIG. 39A

Mixed Primary Glia
sH-IgM.22 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ sH-IgM.22 (3μg/ml)
▲ Br-A23187 (10μM)

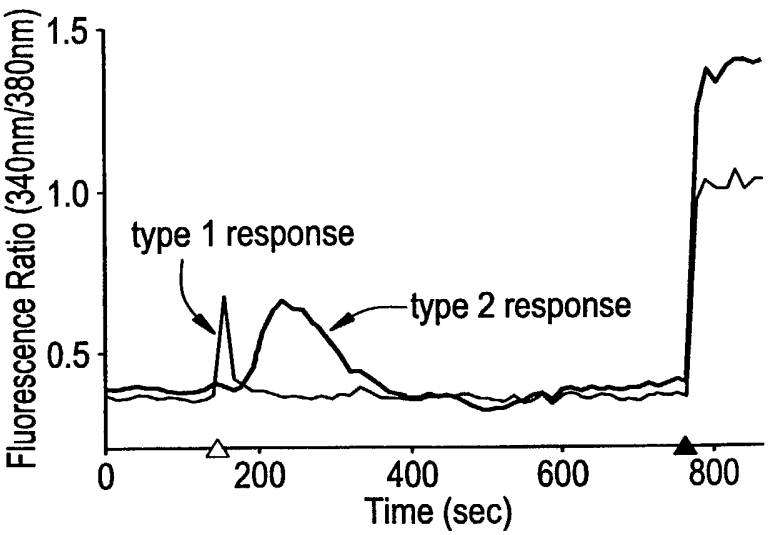


FIG. 39B

Mixed Primary Glia
SCH 94.03 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ SCH 94.03 (3μg/ml)
▲ Br-A23187 (10μM)

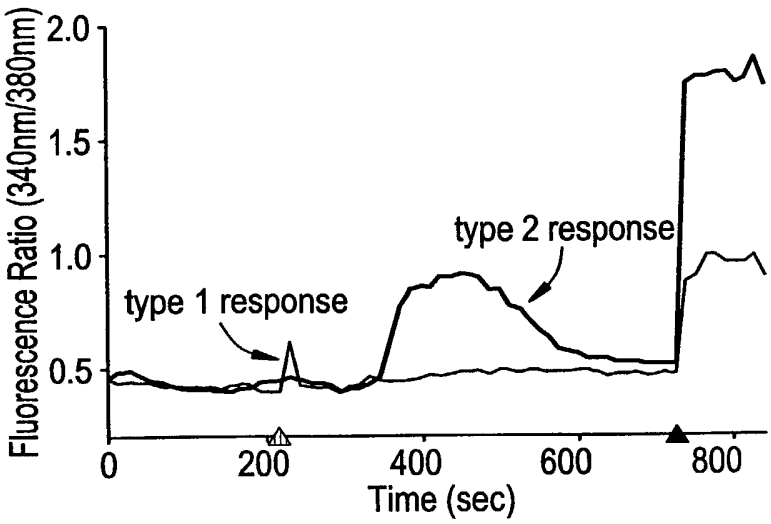


FIG. 39C

Mixed Primary Glia
CH 12/sH-IgM.14 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ CH 12 (3μg/ml)
△ sH-IgM.14 (3μg/ml)
▲ Br-A23187 (10μM)

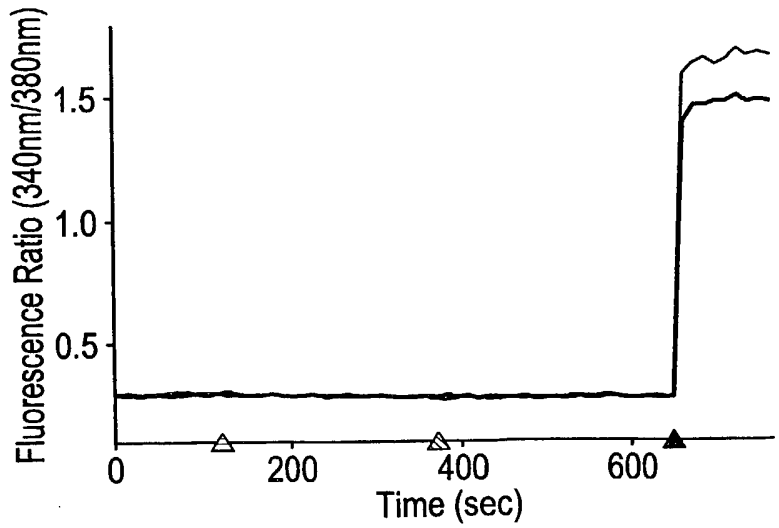


FIG. 40A

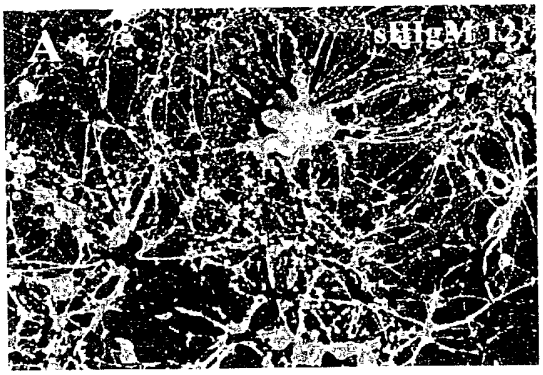


FIG. 40B

FIG. 41

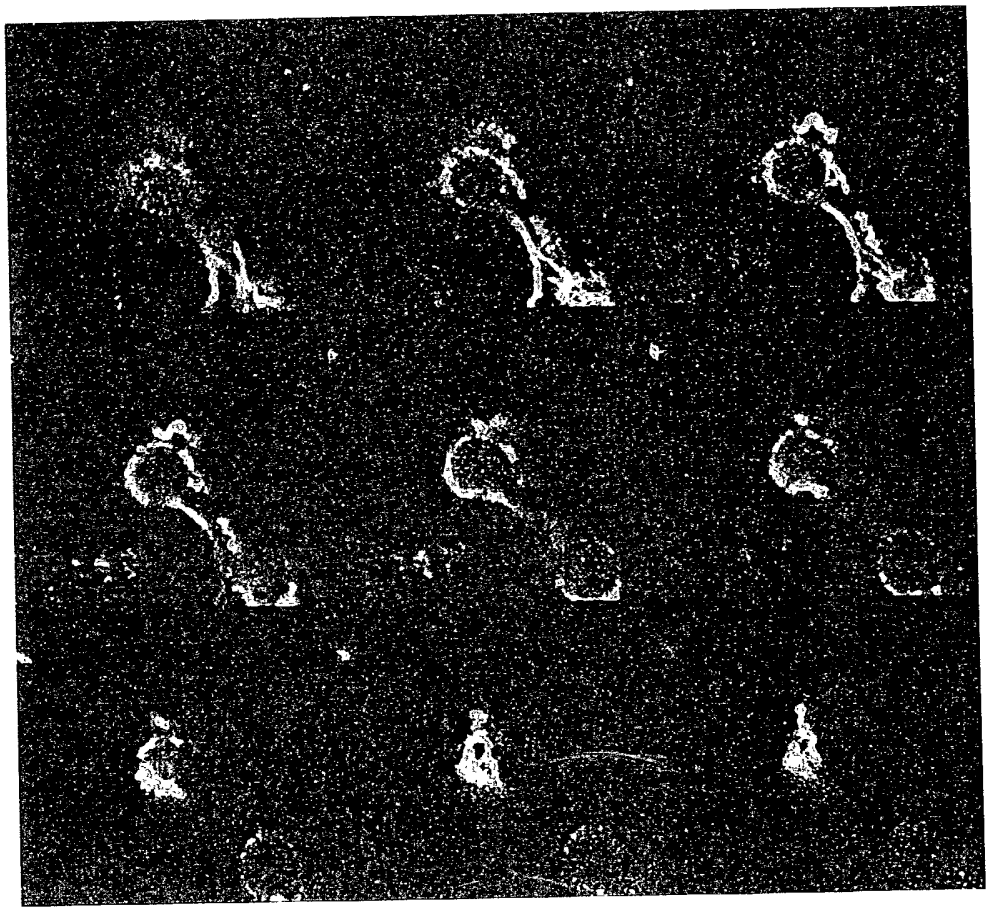


FIG. 42A

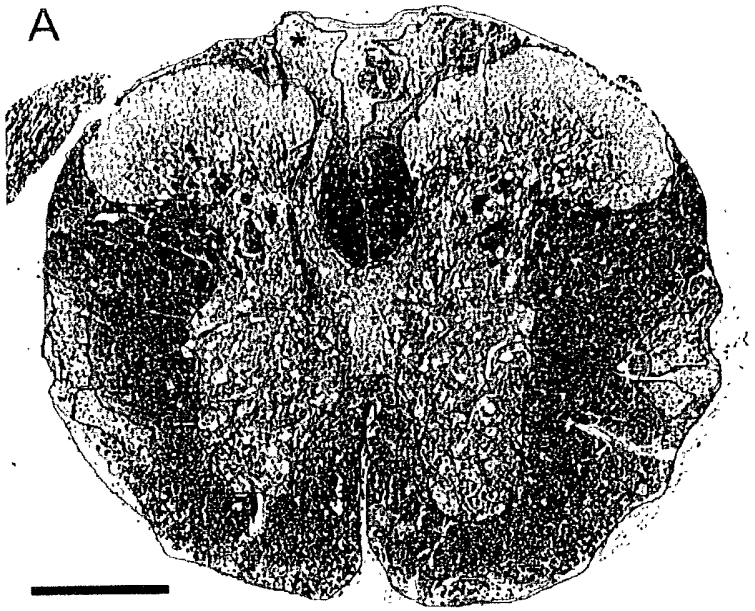


FIG. 42B

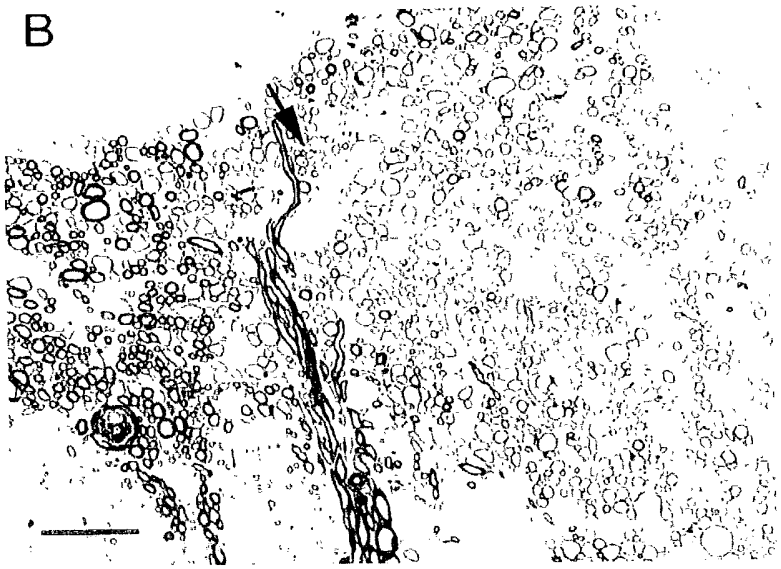


FIG. 43A

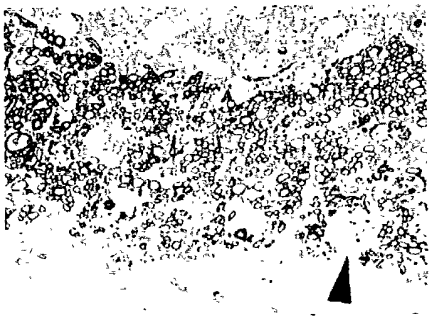


FIG. 43B

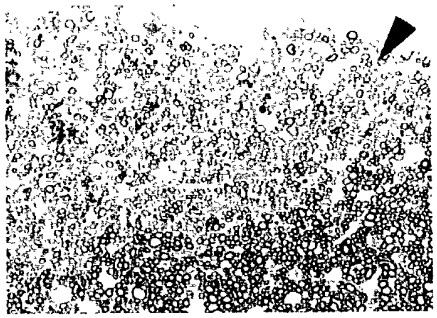


FIG. 43C

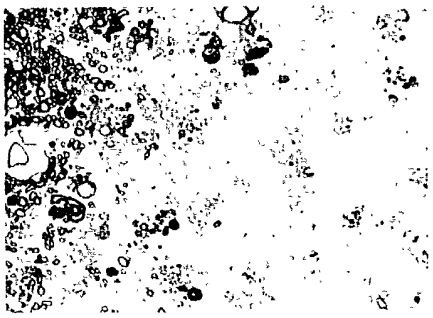


FIG. 43D

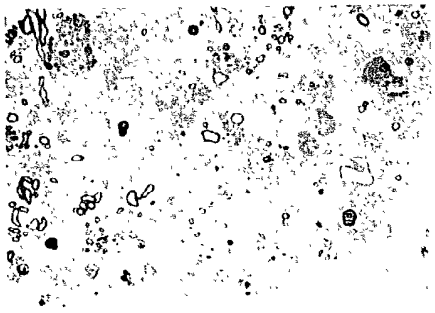


FIG. 43E

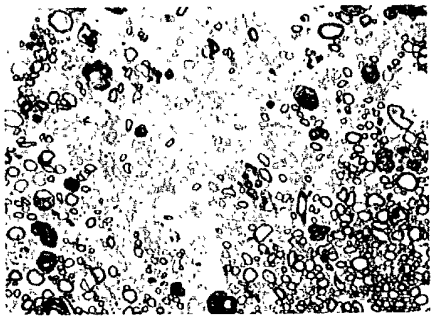


FIG. 43F

FIG. 43G

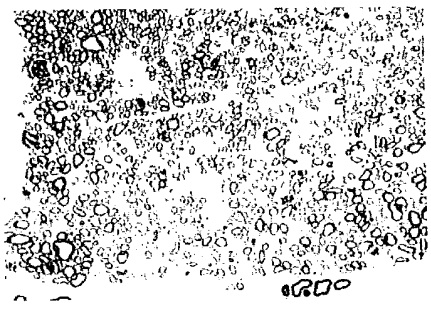


FIG. 43H

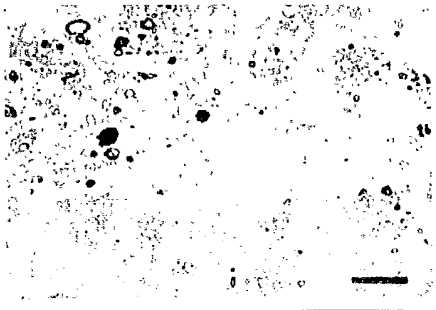


FIG. 44A

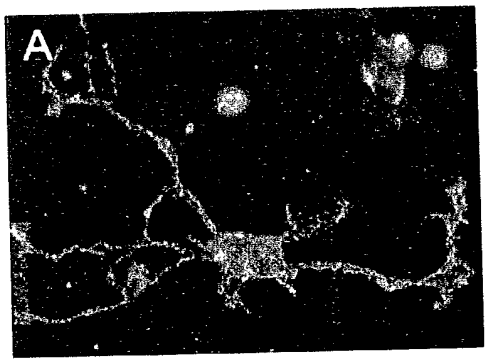


FIG. 44B

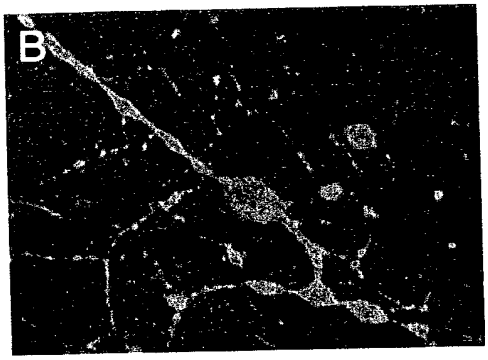


FIG. 44C

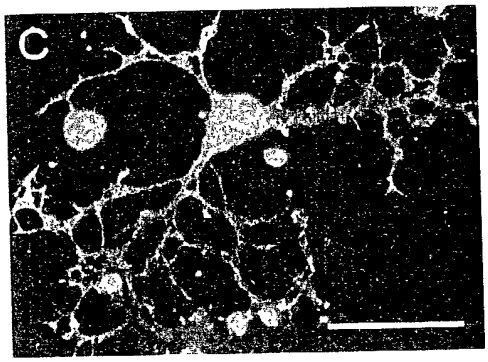


FIG. 44D

FIG. 45

Translation of CB2b-G8 V_H:

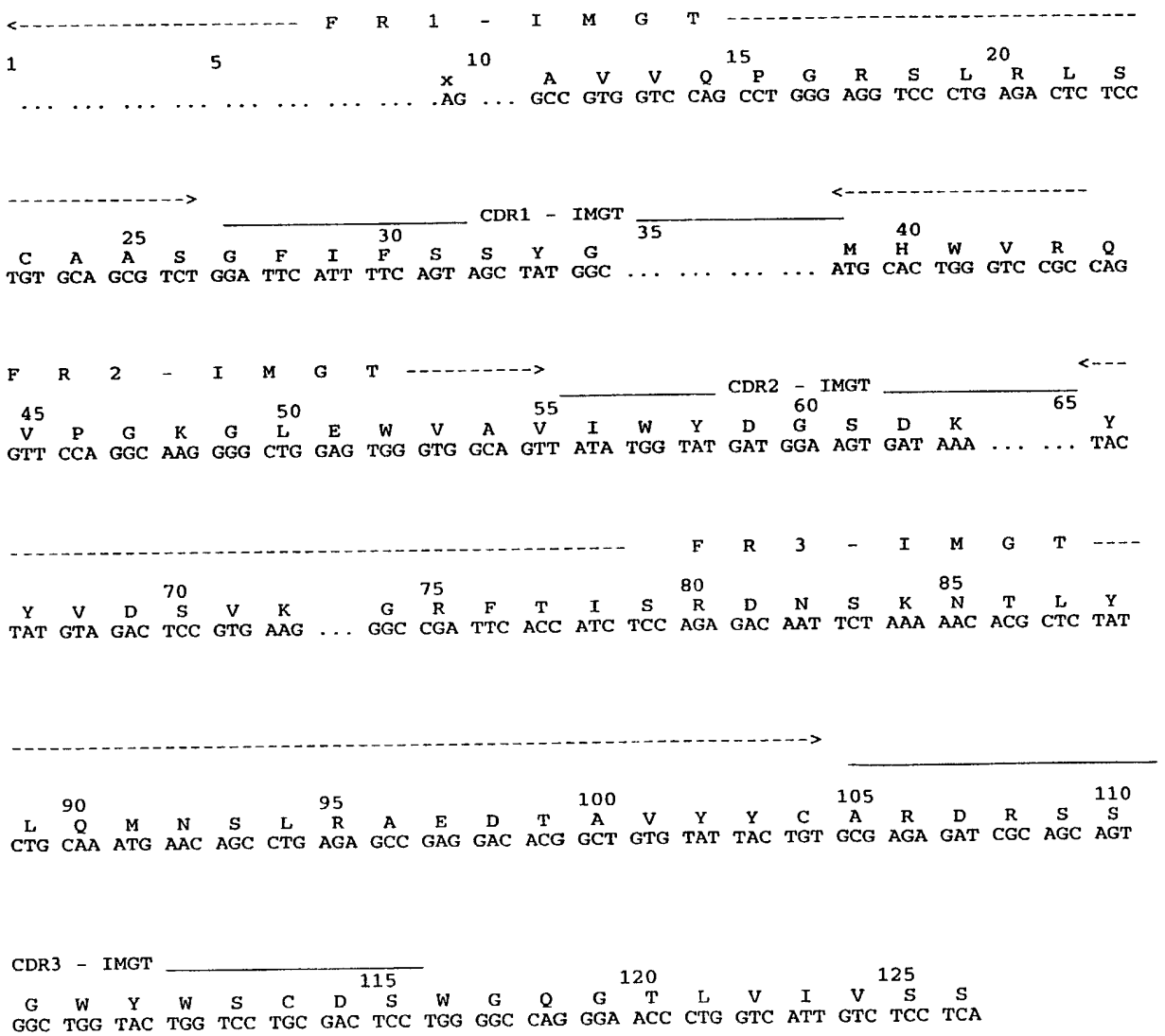


FIG. 46

Translation of CB2b-G8 V_λ

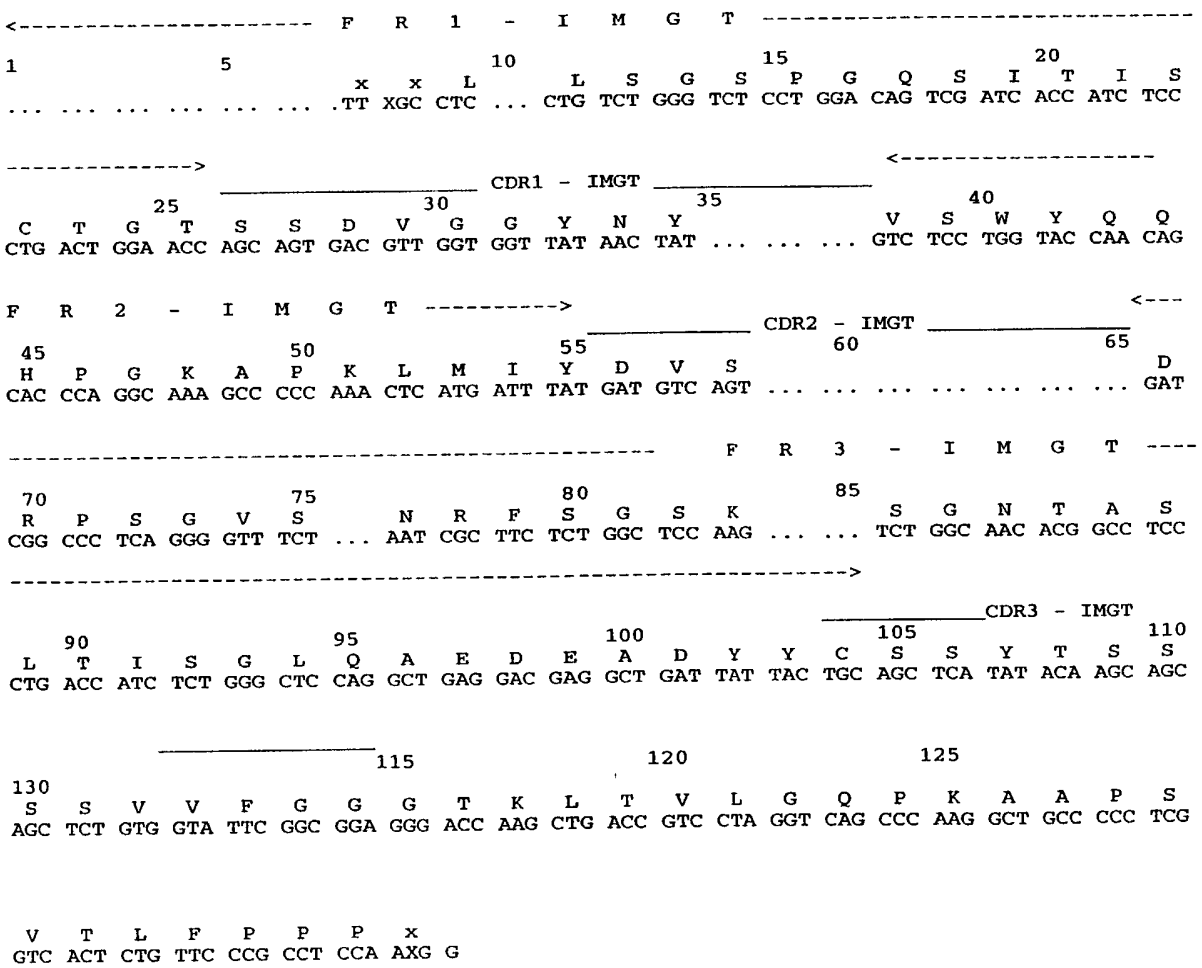


FIG. 47A

DHFR amplification of 94.03κ

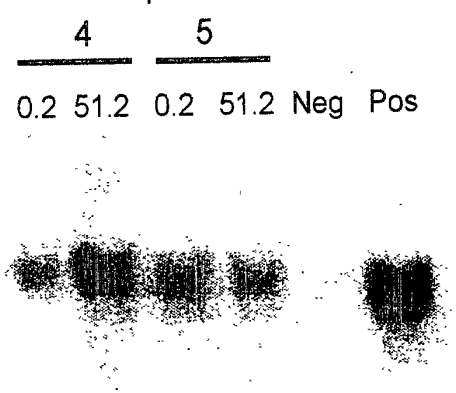


FIG. 47B

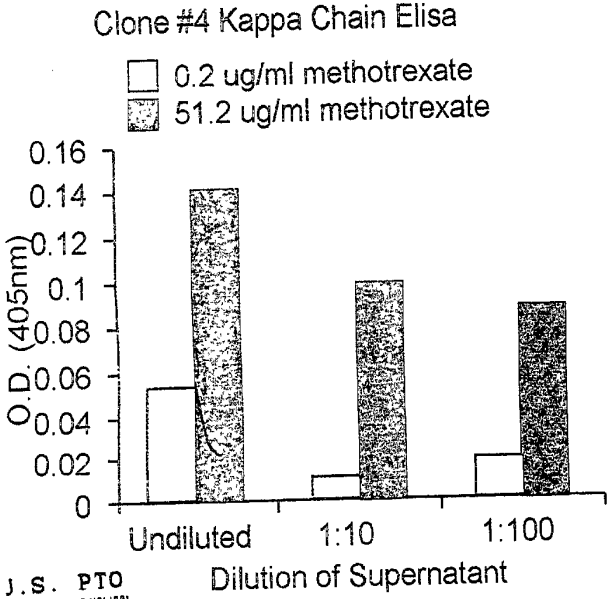


FIG. 47C

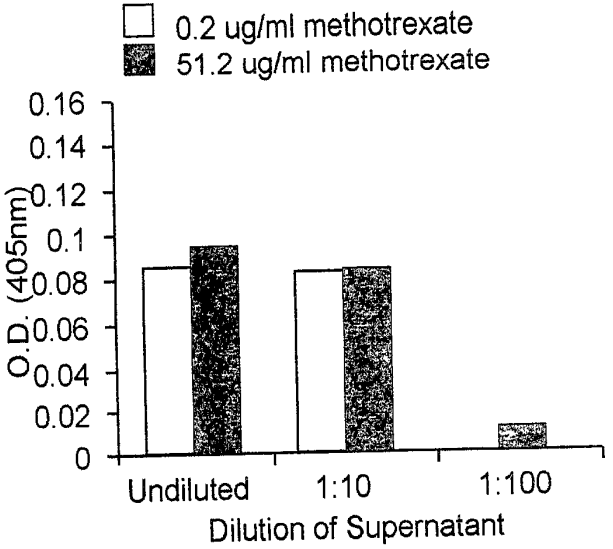
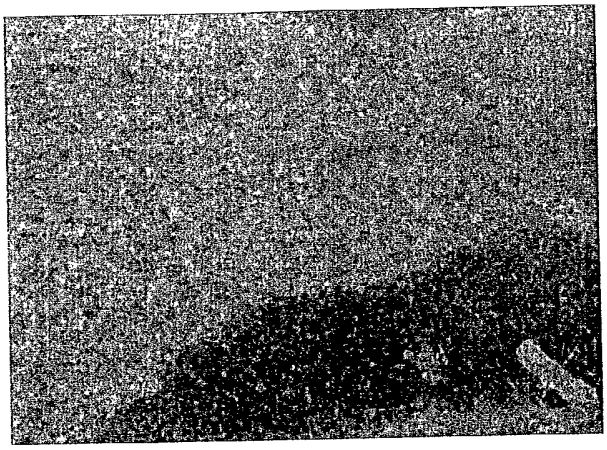
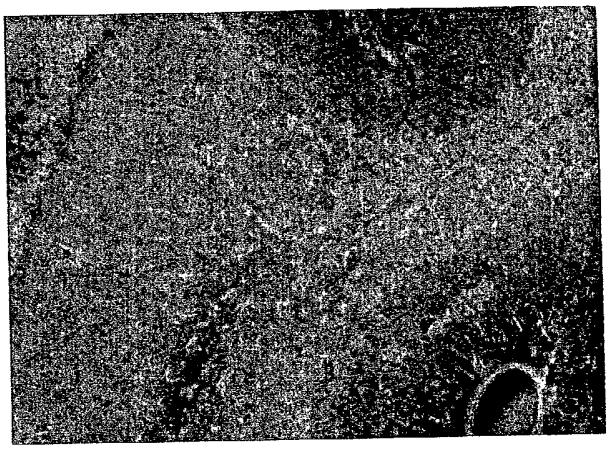


FIG. 49A



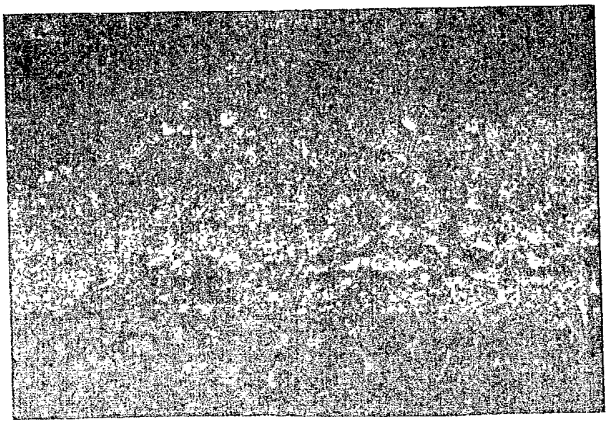
Mouse 94.03

FIG. 49B



Humanized 94.03
clone 1

FIG. 49C



Humanized 94.03
clone 2

FIG. 50A

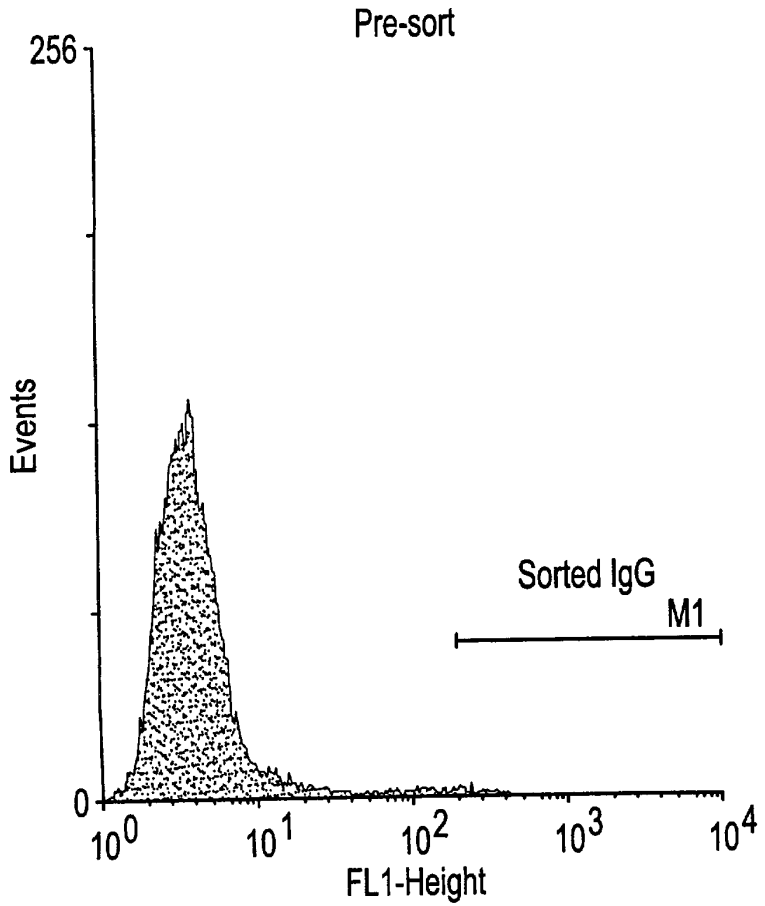


FIG. 50B

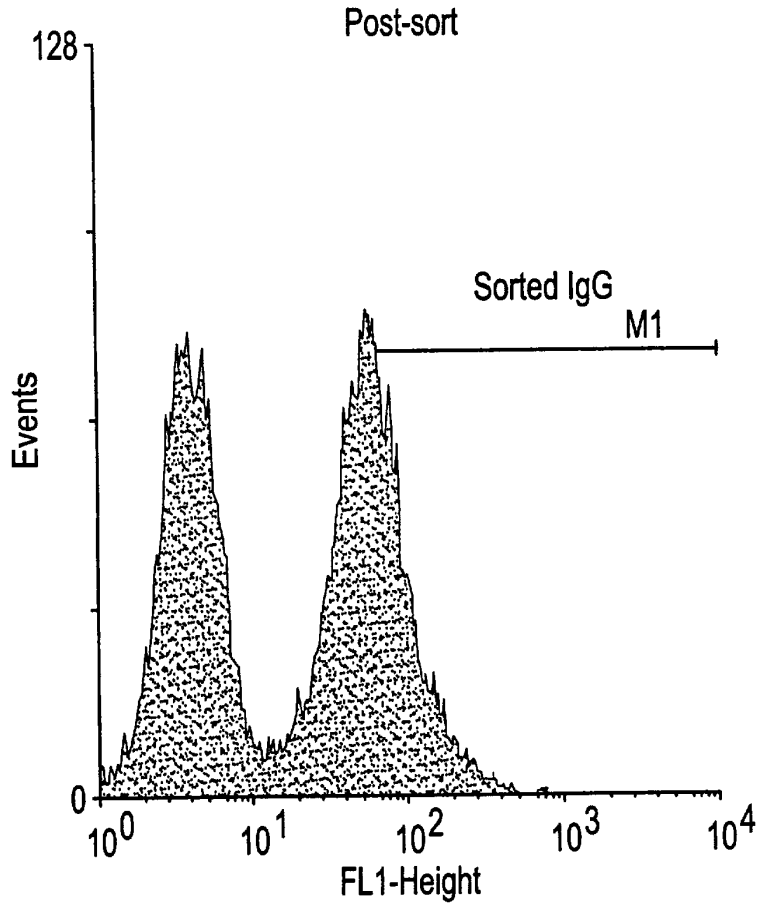
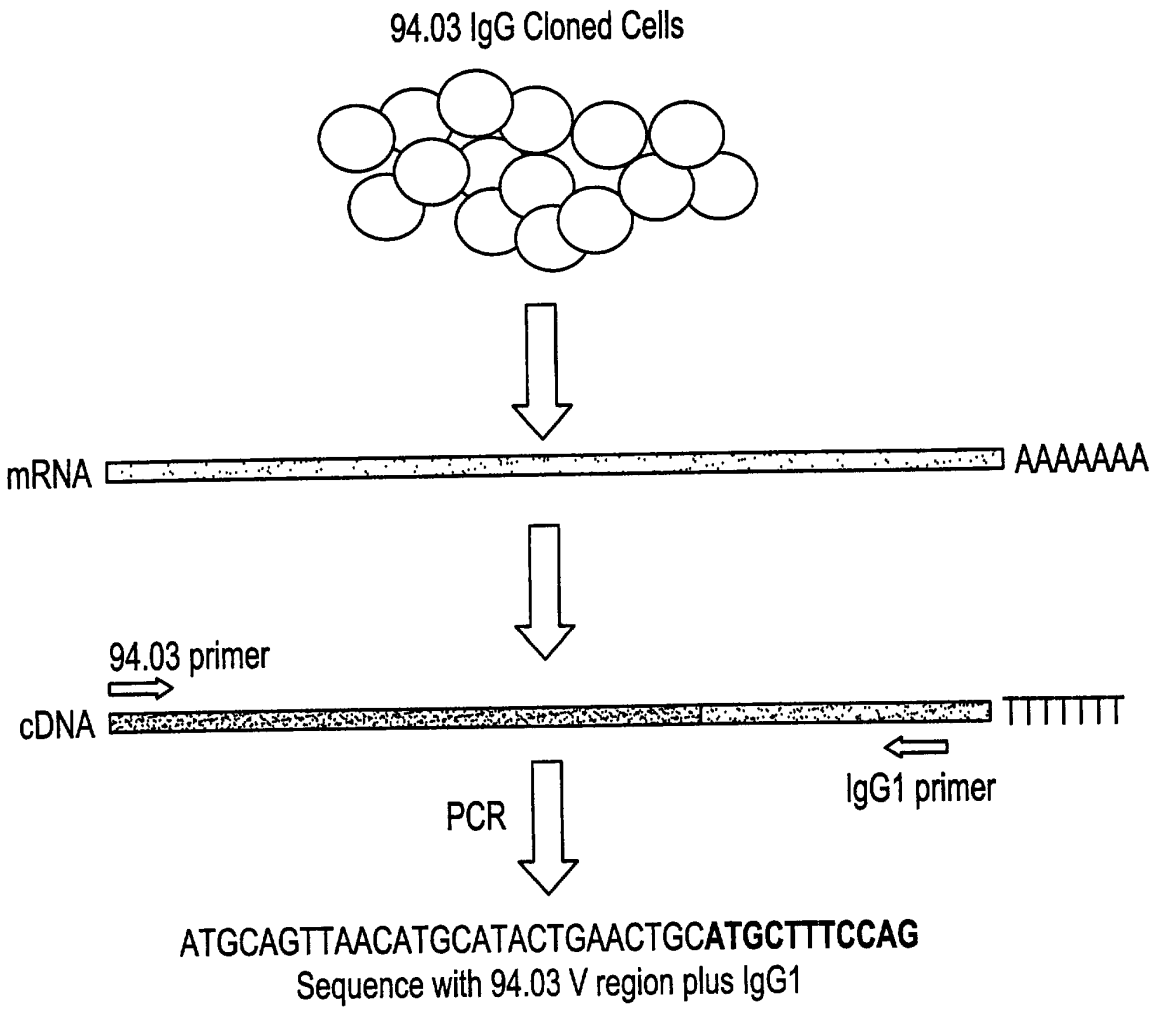


FIG. 51

Sequencing of 94.03 IgG



ATGCAGTTAACATGCATACTGAACTGC**ATGCTTTCCAG**

Sequence with 94.03 V region plus IgG1

FIG. 52

09 V_H Sequence with translation:

```
<---------------------- F R 1 - I M G T ------------------------------

 1           5                  10                  15                  20
 Q [D H L Q Q S G P E L V] K P G A F V K I S
CAG GAT CAC CTG CAG CAG TCT GGA CCT ...GAG CTG GTG AAG CCT GGG GCT TTT GTG AAG ATA TCC

-------------->                                     <--------------------
                ____________________ CDR1 - IMGT _________________
                 25                 30                  35                  40
 C K A S G Y T F T N Y D                 L N W V R Q
TGC AAG GCT TCT GGT TAC ACC TTC ACA AAC TAC GAT ... ... ... ...CTA AAC TGG GTG AGG CAG

F R 2 - I M G T ---------->                                              <--
-
                                        ____________ CDR2 - IMGT _____________
45                  50                  55                  60                  65
 R P G Q G L E W I G W I Y P G N D N T          K
AGG CCT GGA CAG GGC CTT GAG TGG ATT GGA TGG ATT TAT CCT GGA AAT GAT AAT ACT ... ...AAG

------------------------------------------------ F R 3 - I M G T --

            70                  75                  80                  85
 Y N E K F K     G L A S L T A D K S S T T A Y
TAC AAT GAG AAG TTC AAG ...GGC CTG GCC TCA CTG ACT GCA GAC AAG TCC TCC ACC ACA GCC TAC

------------------------------------------------------------------>

                                                    ___________________
    90                  95                  100                 105                 110
 L H L S S L T S E S S A V Y F C A R G L P R
TTG CAT CTC AGC AGC CTG ACT TCT GAG AGC TCT GCA GTC TAT TTC TGT GCA AGA GGG TTA CCT AGG

CDR3 - IMGT ___________
                115                 120
 G W Y F D V W G A G T T V T V S S A
GGC TGG TAC TTC GAT GTC TGG GGC GCA GGG ACC ACG GTC ACC GTC TCC TCA GCT
```

FIG. 53

Translation of 09 kappa light chain 1:

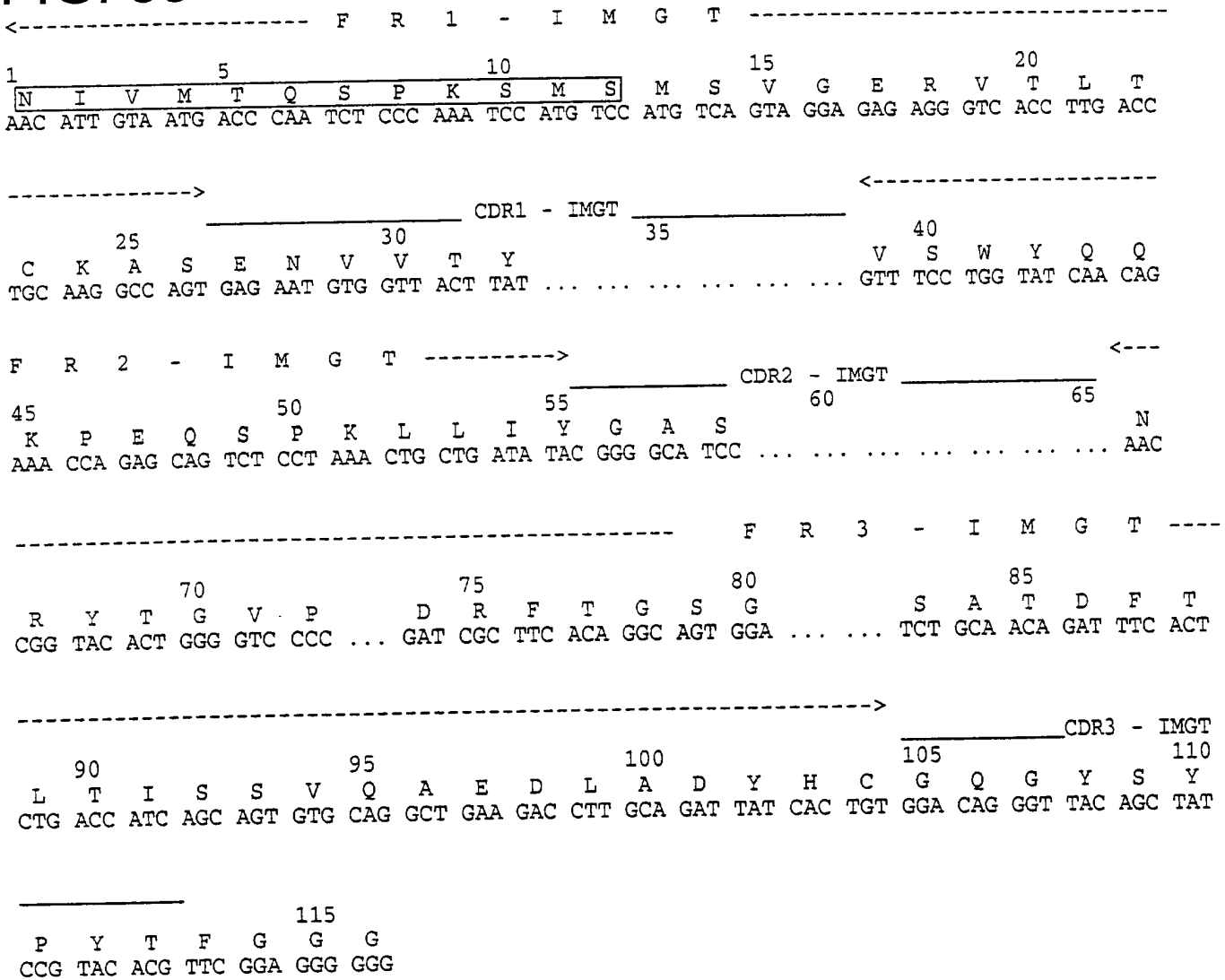


FIG. 54 Translation of 09 kappa light chain 2:

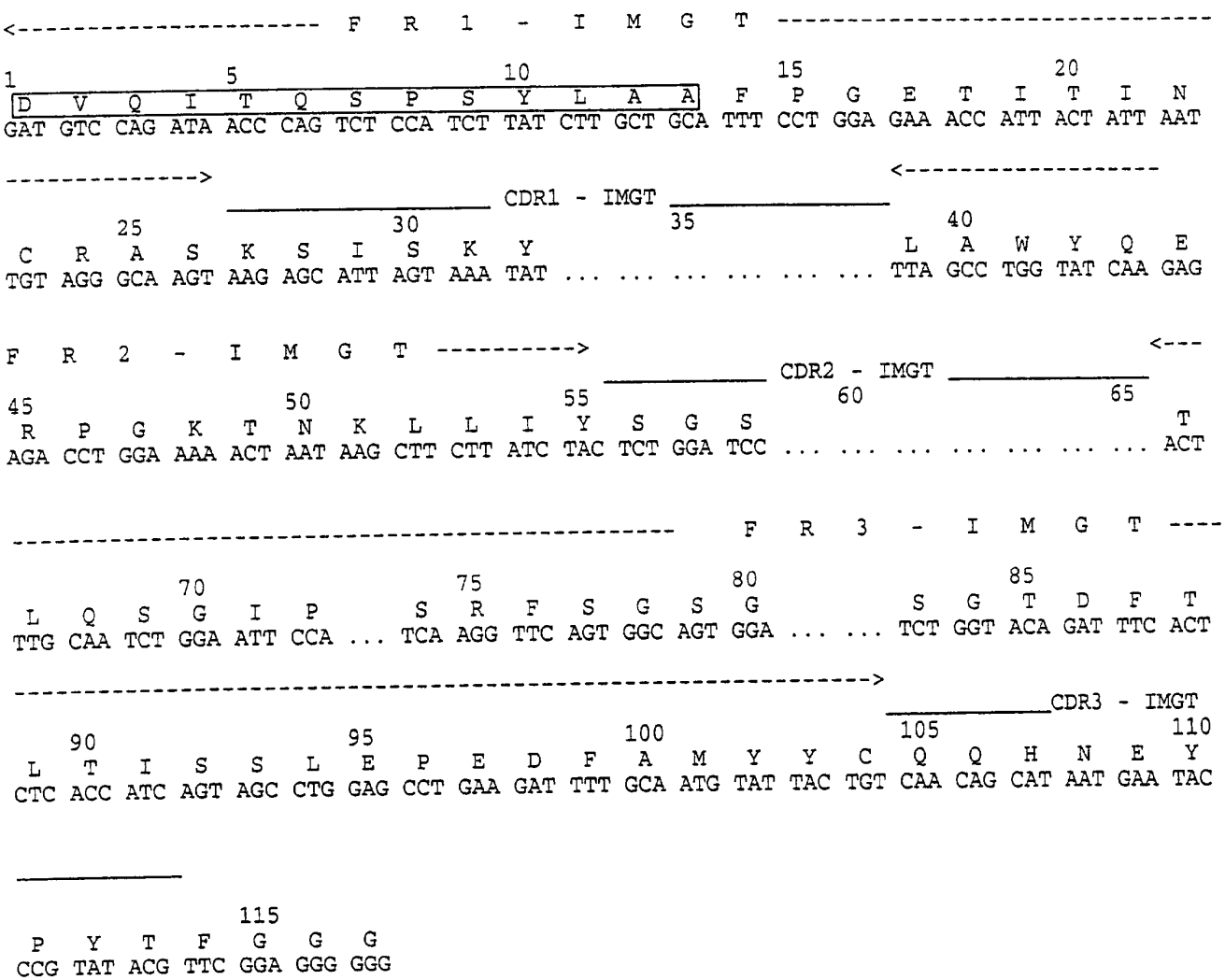


FIG. 55

Translation of AKJR 4 Heavy Chain:

```
<---------------------- F R 1 - I M G T ------------------------------

1                5                  10                  15                  20
 E  V  Q  L  L  E  S  G  G       G  L  V  Q  P  G  G  S  L  R  L  S
GAG GTG CAA CTA TTG GAA TCT GGG GGA ... GGC TTG GTA CAG CCT GGG GGG TCC CTG AGA CTC TCC

---------->                                                <----------------------
                 _____________________ CDR1 - IMGT _____________
          25                 30                  35                  40
 C  A  A  S  G  F  S  F  I  D  Y  A                    M  S  W  V  R  Q
TGT GCA GCC TCT GGA TTC AGC TTT ATC GAC TAT GCC ... ... ... ... ATG AGC TGG GTC CGC CAG

                                                                        <---
F  R  2  -  I  M  G  T ---------->                 _____________ CDR2 - IMGT _____________
45                 50                 55                  60                  65
 A  P  G  K  G  L  E  W  V  S  S  L  S  G  D  S  G  S  S              Y
GCT CCA GGG AAG GGA CTG GAG TGG GTC TCA AGT CTT AGT GGT GAT AGT GGT AGT TCA ... ... TAT

------------------------------------------- F R 3 - I M G T ----

          70                  75                  80                  85
 Y  A  D  S  V  K       G  R  F  T  I  S  R  D  N  S  K  S  T  V  F
TAT GCA GAC TCC GTG AAG ... GGC CGA TTC ACC ATC TCC AGA GAC AAT TCC AAG AGC ACG GTG TTT

------------------------------------------------------------>
                                                    _____________CDR3 - IMGT
    90                  95                 100                 105                 110
 L  Q  L  S  S  L  R  A  E  D  T  A  I  Y  Y  C  A  Q  E  T  G  P
CTG CAA CTG AGC AGC CTG AGA GCC GAG GAC ACG GCC ATA TAT TAC TGT GCG CAG GAG ACC GGT CCC

_____________
                115                 120                 125                 130
 Q  R  R  W  G  Q  G  T  L  V  T  V  S  S  G  S  A  S  A  P  T  L
CAG CGT CGC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA GGG AGT GCA TCC GCC CCA ACC CTT
```

FIG. 56

Translation of AKJR 4 Kappa Light Chain:

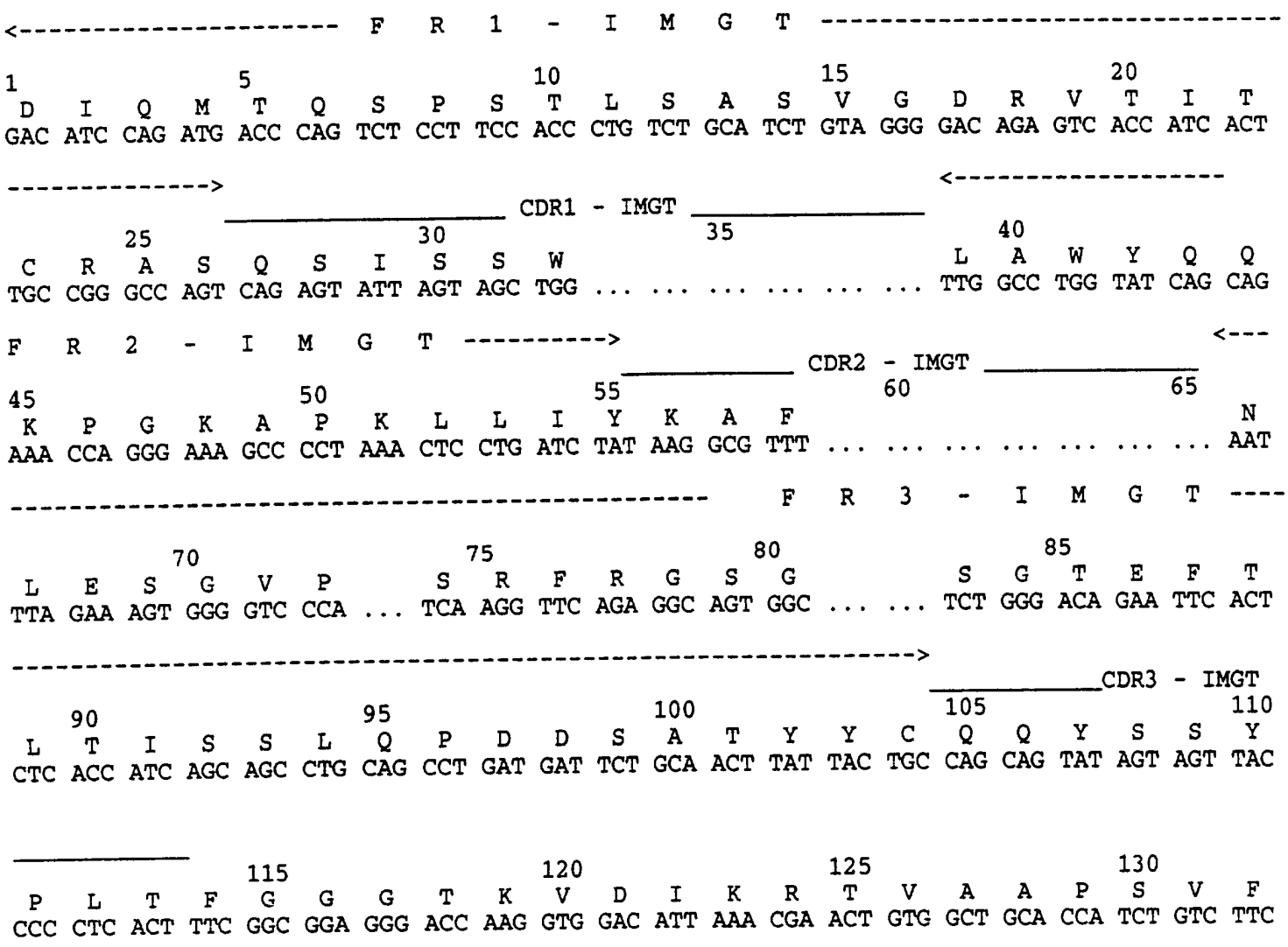


FIG. 57 Translation of CB2i-E12 Heavy Chain:

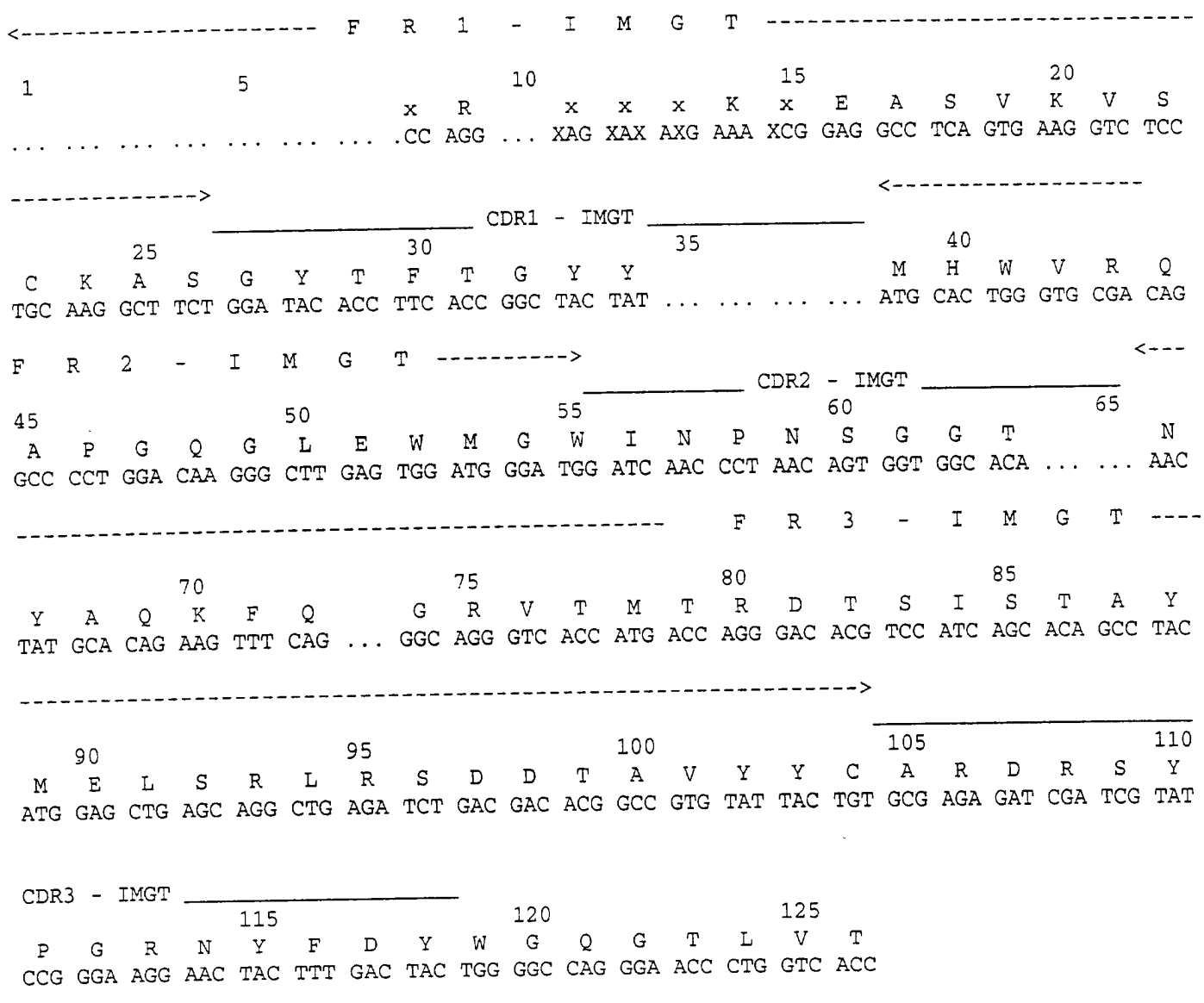


FIG. 58 Translation of CB2i-E12 kappa chain:

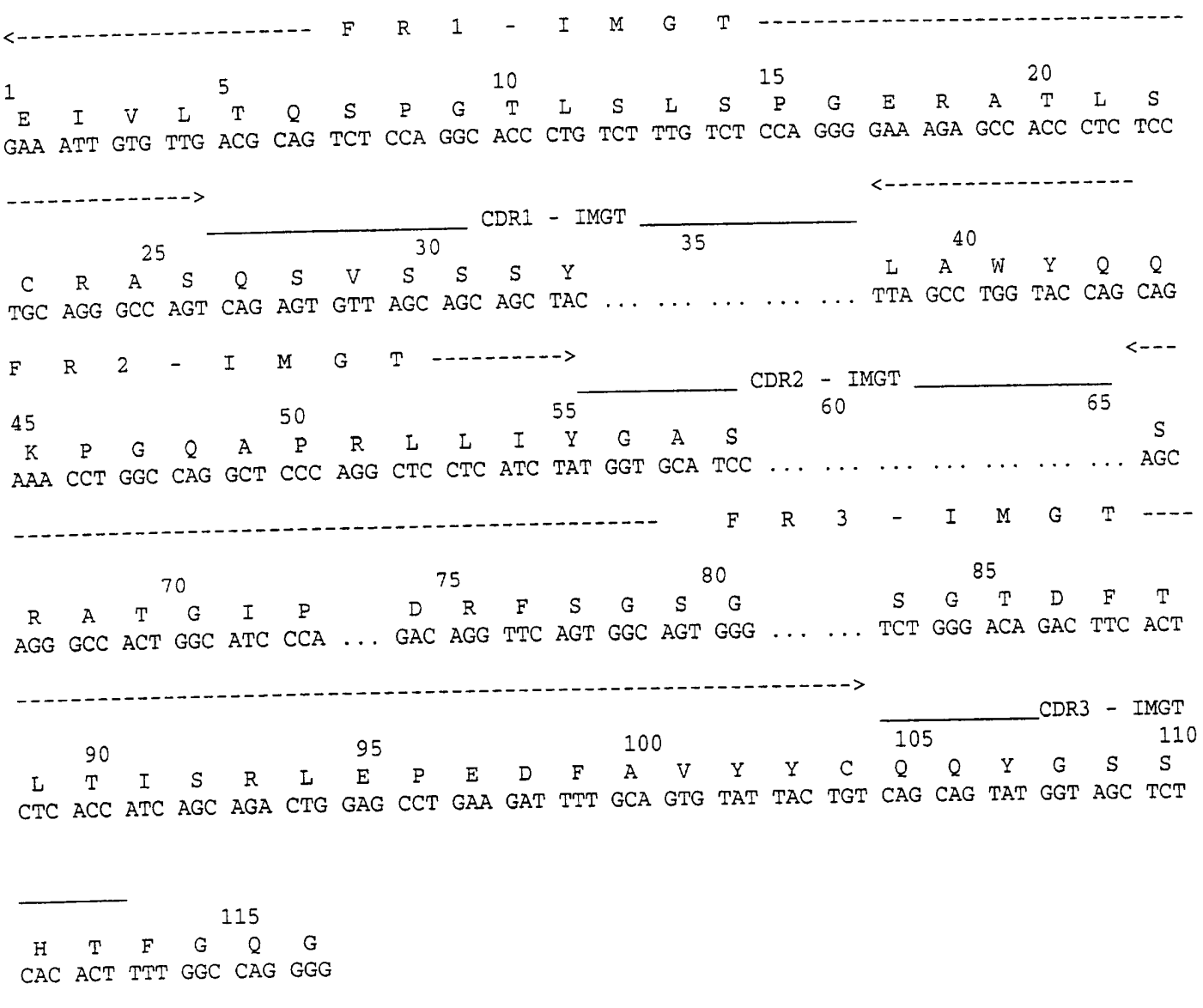


FIG. 59 Translation of CB2i-E7 Heavy Chain:

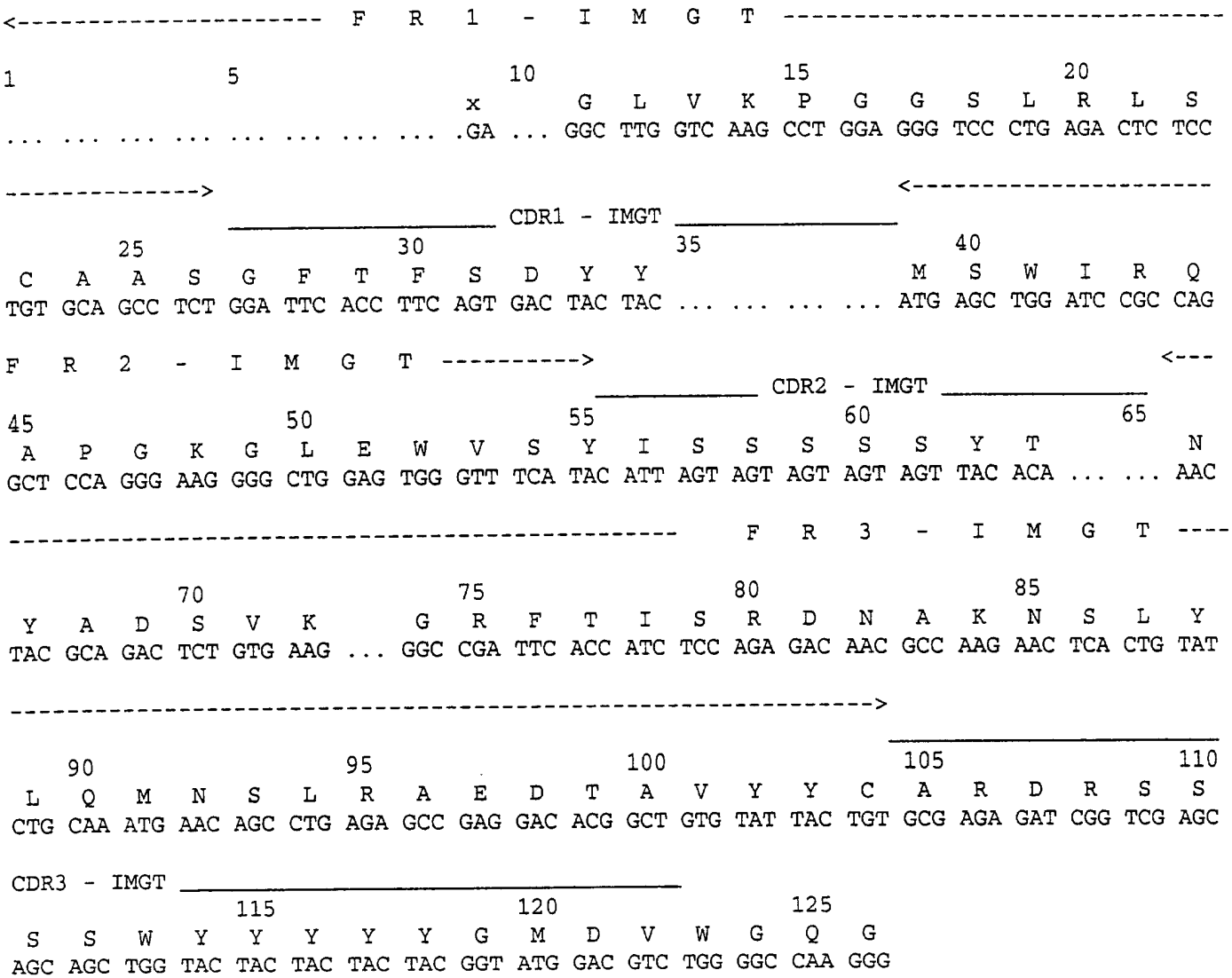


FIG. 60 Translation of CB2i-E7 kappa Chain:

```
<---------------------- F   R   1   -   I   M   G   T ------------------------------

1               5                   10                  15                  20
 D   I   Q   M   T   Q   S   P   S   S   L   S   A   S   V   G   D   R   V   T   I   T
GAC ATC CAG ATG ACC CAG TCT CCA TCC TCC CTG TCT GCA TCT GTA GGA GAC AGA GTC ACC ATC ACT

-------------->                                                  <-------------------
               _____________________ CDR1 - IMGT _________________
        25                  30                  35                  40
 C   R   A   S   Q   G   I   S   N   Y                           L   A   W   Y   Q   Q
TGC CGG GCG AGT CAG GGC ATT AGC AAT TAT ... ... ... ... ... ... TTA GCC TGG TAT CAG CAG

F   R   2   -   I   M   G   T ---------->                                          <---
                                          _____________ CDR2 - IMGT _______________
45                  50                  55                  60                  65
 K   P   G   K   V   P   K   L   L   I   Y   A   A   S                               T
AAA CCA GGG AAA GTT CCT AAG CTC CTG ATC TAT GCT GCA TCC ... ... ... ... ... ... ... ACT

-------------------------------------------------    F   R   3   -   I   M   G   T ----

            70                  75                  80                  85
 L   Q   S   G   V   P       S   R   F   N   G   S   G           S   G   T   D   F   T
TTG CAA TCA GGG GTC CCA ... TCT CGG TTC AAT GGC AGT GGA ... ... TCT GGG ACA GAT TTC ACT

------------------------------------------------------------>
                                                              _____________CDR3 - IMGT
     90                  95                  100                 105                 110
 L   T   I   S   S   L   Q   P   E   D   V   A   T   Y   Y   C   Q   K   Y   N   K   C
CTC ACC ATC AGC AGC CTG CAA CCT GAA GAT GTT GCA ACT TAT TAC TGT CAA AAG TAT AAC AAG TGC


_____________
                115
 P   S   H   F   R   G   R   D
CCC TCT CAC TTT CGG GGG AGG GAC
```

FIG. 61

Translation Of MSI 19-E5 Light Chain

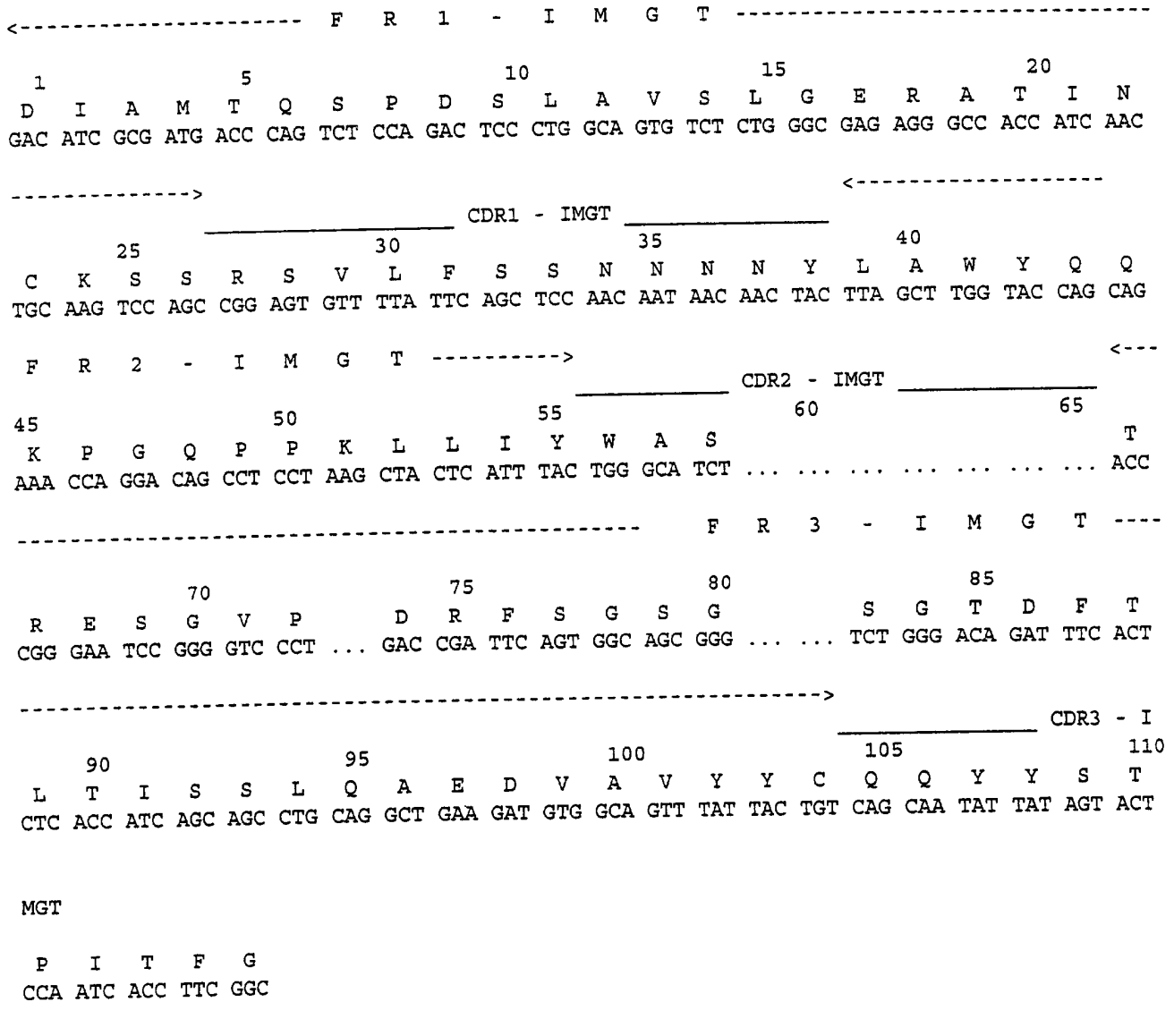


FIG. 62

Translation of 04 kappa chain 2:

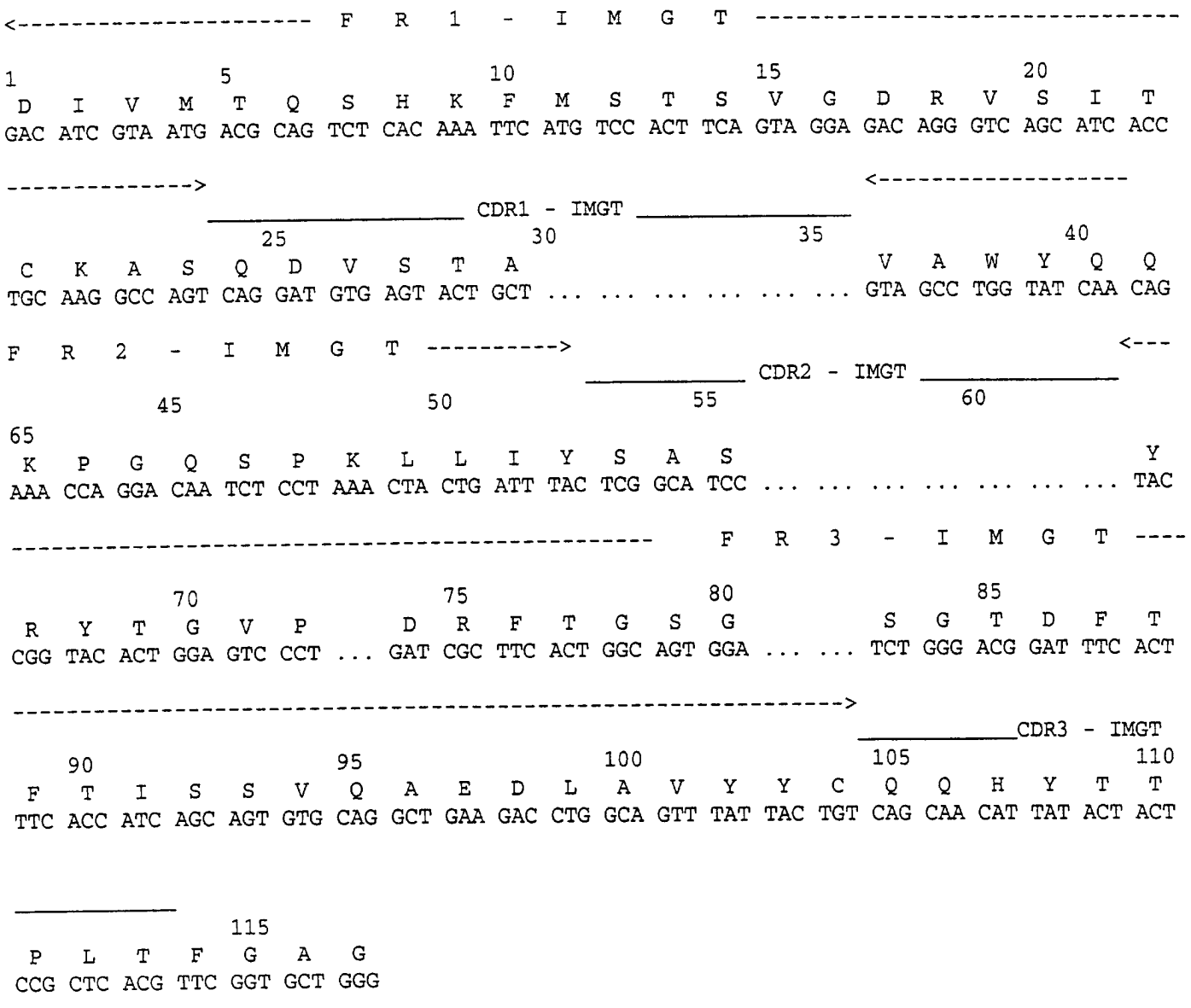


FIG. 63A

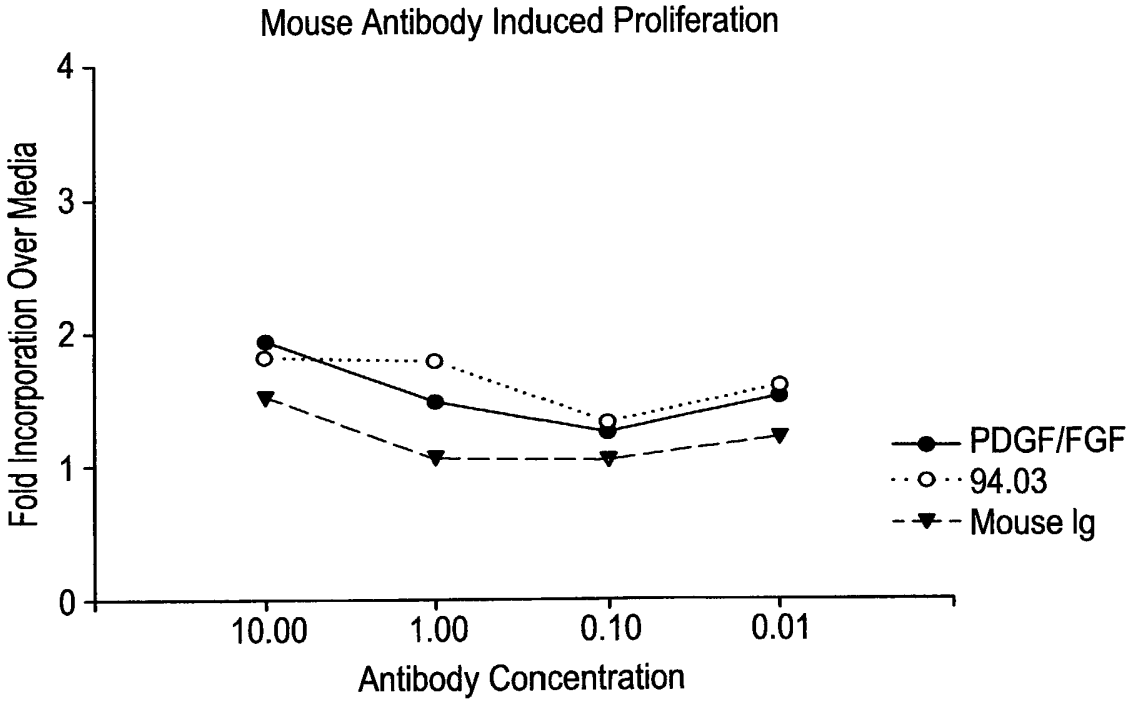


FIG. 63B

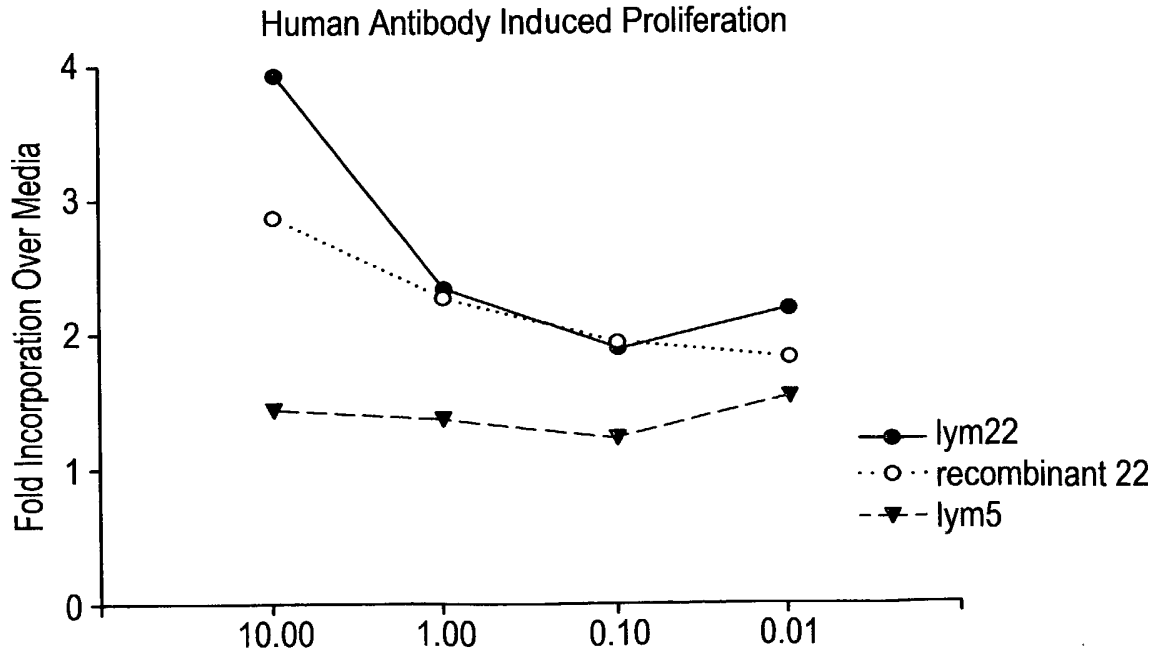


FIG. 64

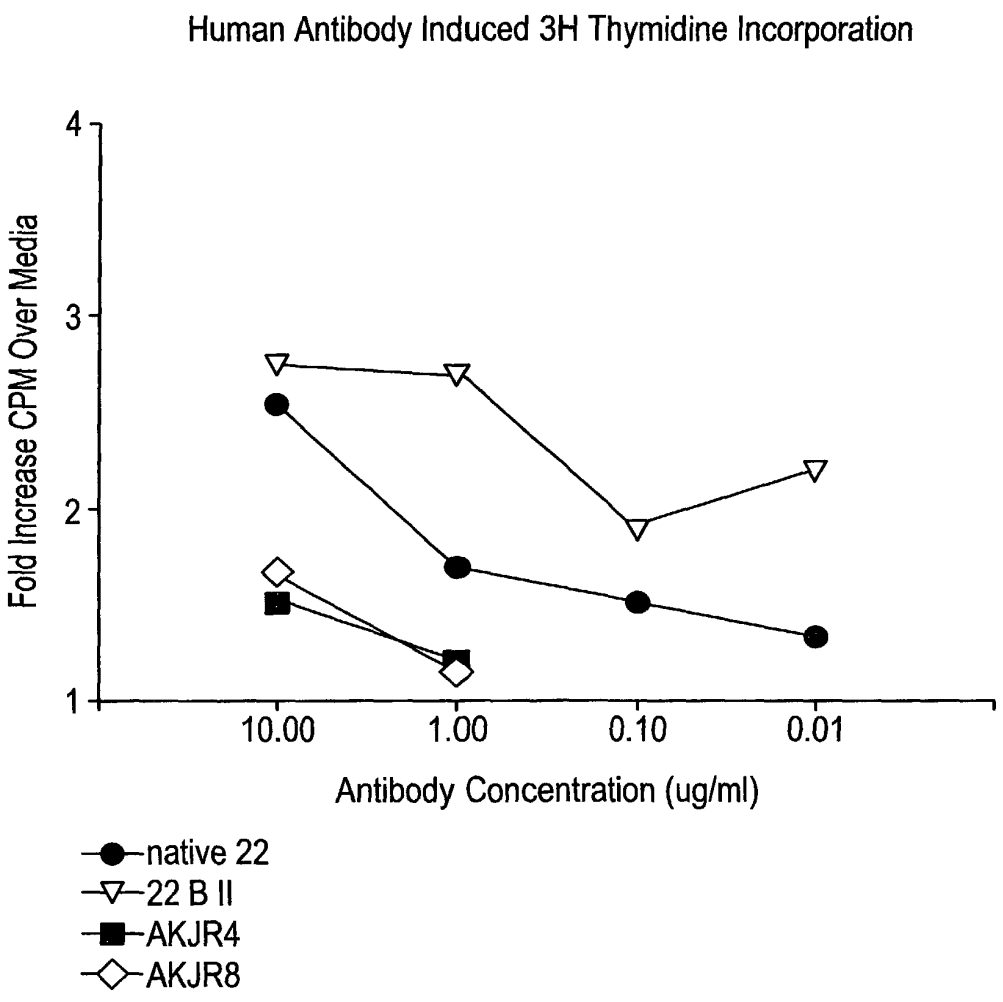


FIG. 65

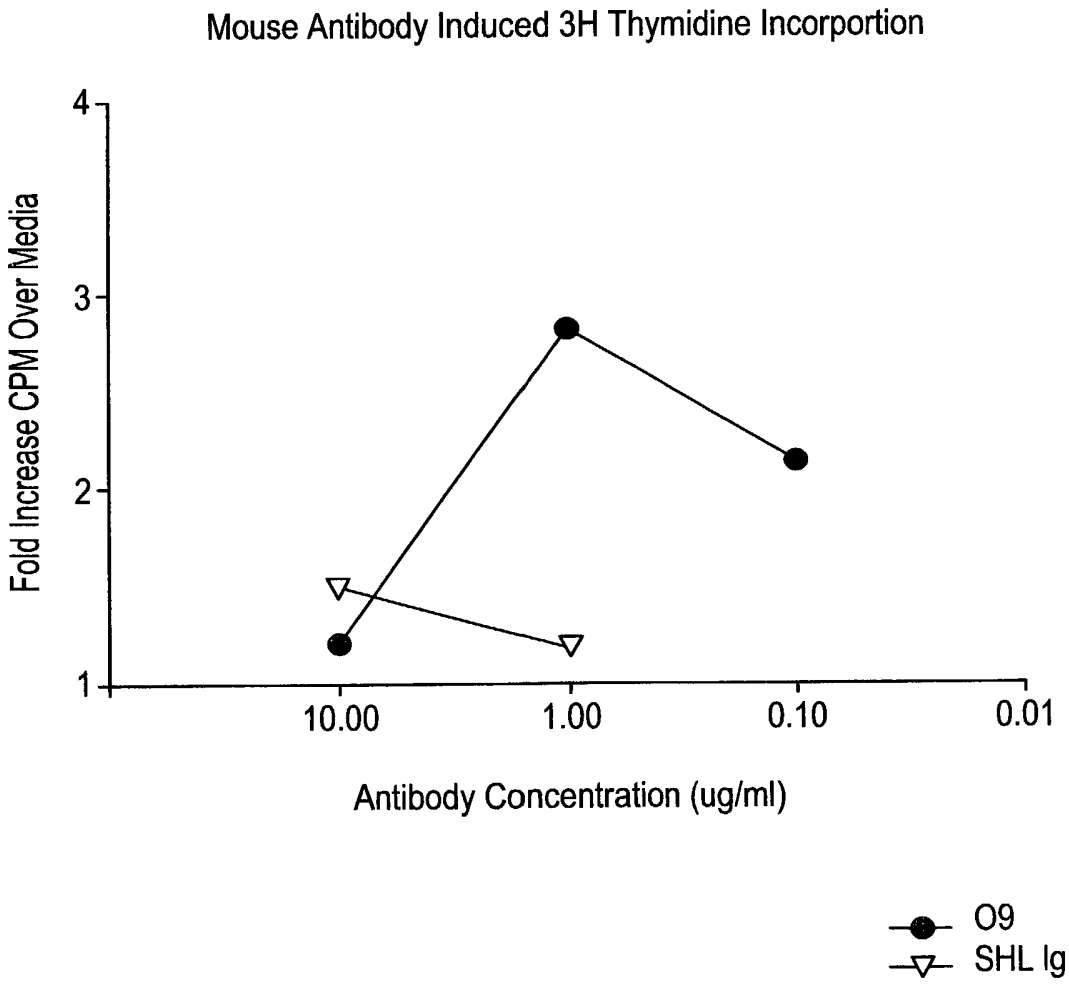
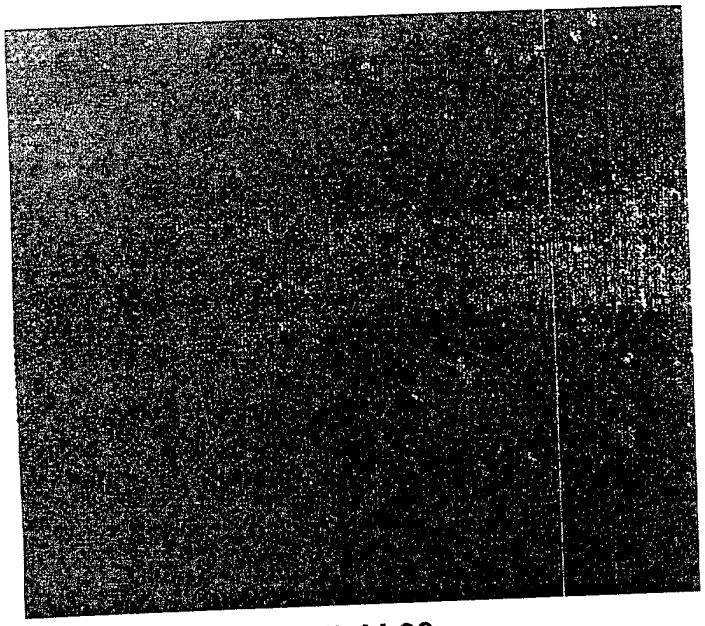
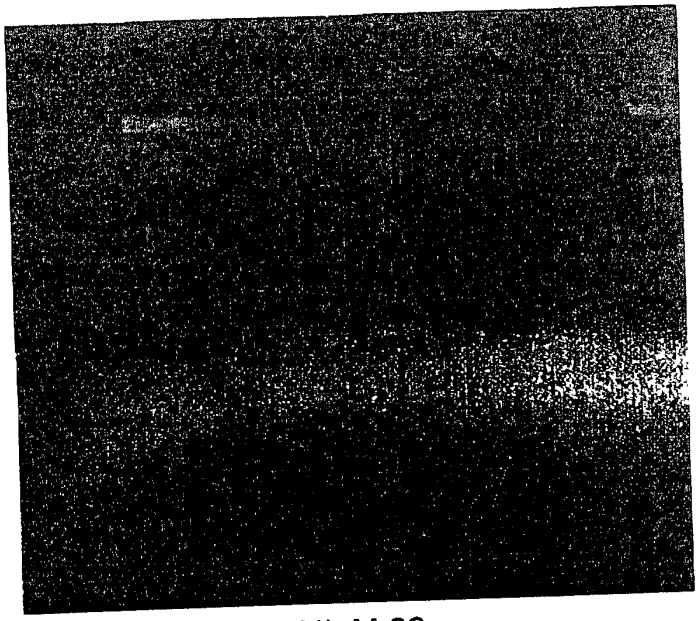


FIG. 66A



sHIgM 22

FIG. 66B



rHIgM 22

FIG. 68

TRANSLATION OF 01 KAPPA CHAIN

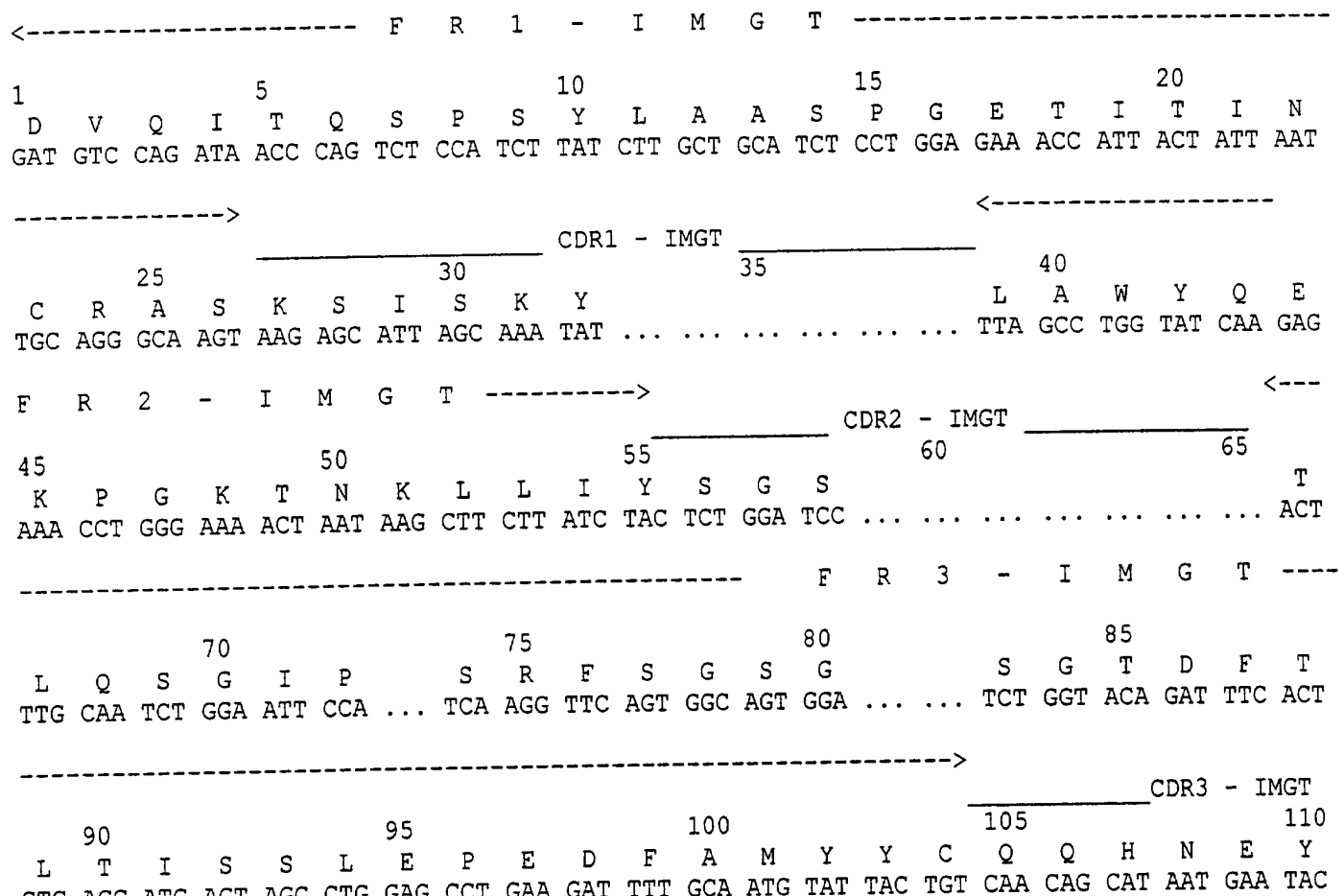


FIG. 69

TRANSLATION OF HNK-1 KAPPA CHAIN

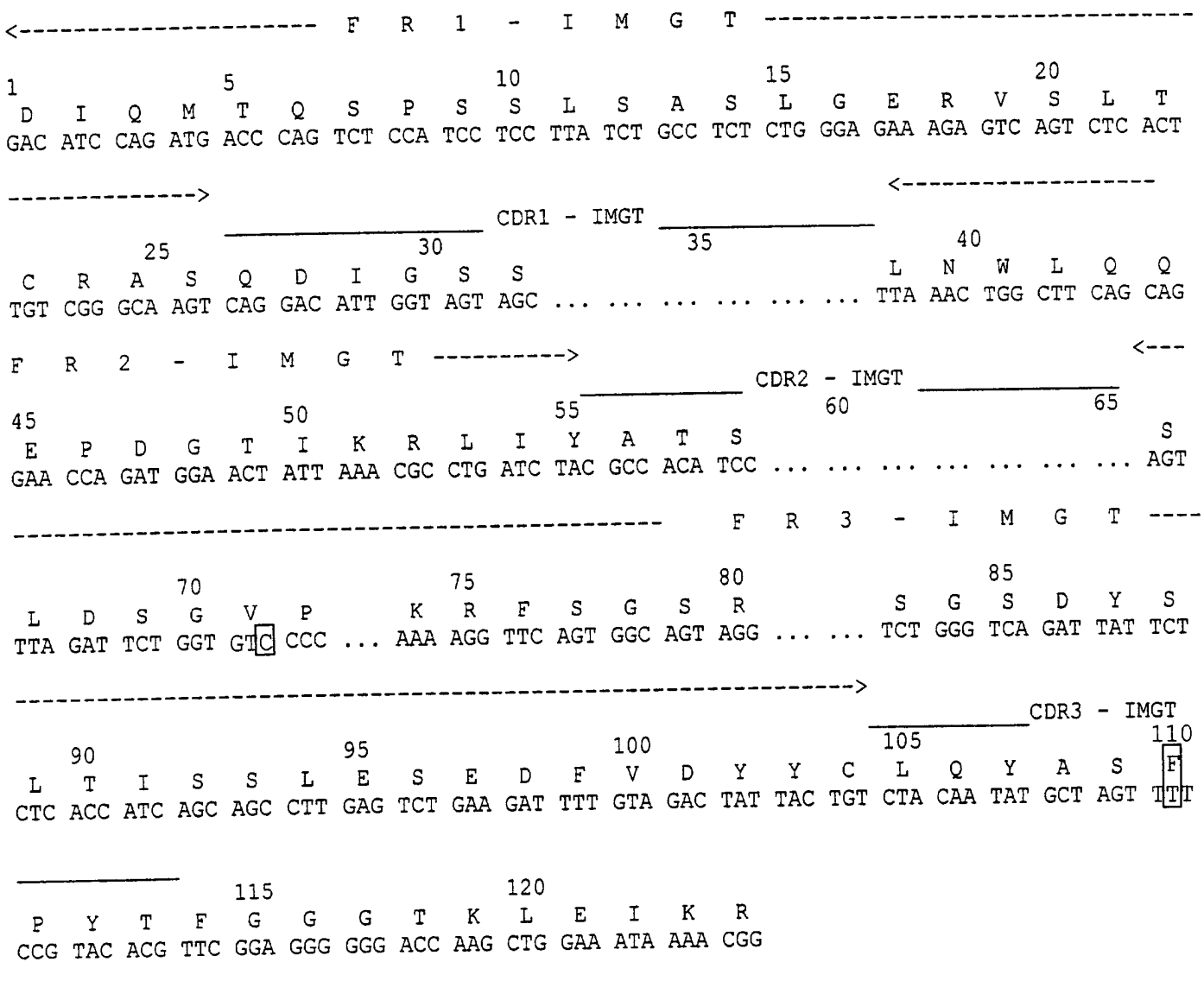


FIG. 70

TRANSLATION OF A2B5 KAPPA CHAIN

```
←----------------------------------------------F  R  1  -  I  M  G  T --------
1              5                10                15                20
 Q  I  V  L  T  Q  S  P  A  I  M  S  A  S  P  G  E  K  V  T  I  S
CAA ATT GTT CTC ACC CAG TCT CCA GCA ATC ATG TCT GCA TCT CCA GGG GAG AAG GTC ACC ATA TCC

-------------->                                                 <------------------
                ____________________ CDR1 - IMGT _____________
        25              30              35                      40
 C  S  A  S  S  S  V  S  Y                                    M  Y  W  Y  Q  Q
TGC AGT GCC AGC TCA AGT GTA AGT TAC ... ... ... ... ... ... ... ATG TAC TGG TAC CAG CAG

F  R  2  -  I  M  G  T ---------->                                          <---
                                  ____________ CDR2 - IMGT _____________
45                50              55              60                65
 K  P  G  S  S  P  K  P  W  I  Y  R  T  S                                    N
AAG CCA GGA TCC TCC CCC AAA CCC TGG ATT TAT CGC ACA TCC ... ... ... ... ... ... ... AAC

-----------------------------------------------  F  R  3  -  I  M  G  T ----

            70                75                80                85
 L  A  S  G  V  P        A  R  F  S  G  S  G           S  G  T  S  Y  S
CTG GCT TCT GGA GTC CCT ... GCT CGC TTC AGT GGC AGT GGG ... ... TCT GGG ACC TCT TAC TCT

-------------------------------------------------------------->
                                                    ____________CDR3 - IMGT
    90                95               100               105               110
 L  T  I  S  S  M  E  A  E  D  A  A  T  Y  Y  C  Q  Q  Y  H  S  Y
CTC ACA ATC AGC AGC ATG GAG GCT GAA GAT GCT GCC ACT TAT TAC TGC CAG CAG TAT CAT AGT TAC

__________
          115               120
 P  L  T  F  G  A  G  T  K  L  E  L  K  R
CCA CTC ACG TTC GGT GCT GGG ACC AAG CTG GAG CTG AAA CGG
```

FIG. 71

LYM 46 Heavy Chain Sequence:

FR 1

E V Q L V E S G G G L V Q P G
GAG GTG CAG CTG GTG GAG TCT GGG GGA GGC TTG GTC CAG CCT GGG

CDR1

G S L R L S C A A S G F T F S
GGG TCC CTG AGA CTC TCC TGT GCA GCC TCT GGA TTC ACC TTT AGT

FR 2

S Y W M T W V R Q A P G K G L
AGC TAT TGG ATG ACC TGG GTC CGC CAG GCT CCA GGG AAG GGG CTG

CDR2

E W V A N I K K D G S E K S Y
GAG TGG GTG GCC AAC ATA AAG AAA GAT GGA AGT GAG AAA TCC TAT

FR3

V D S V K G R F T T S R D N A
GTG GAC TCT GTG AAG GGC CGA TTC ACC ACC TCC AGA GAC AAC GCC

K N S L Y L Q M N S L R A E D
AAG AAC TCA CTG TAT CTG CAA ATG AAC AGC CTG AGA GCC GAG GAC

CDR3

T A V Y Y C A R P N C G G D C
ACG GCT GTG TAT TAC TGT GCG AGA CCC AAT TGT GGT GGT GAC TGC

Y L P W Y F D L W G R G T L V
TAT TTA CCA TGG TAC TTC GAT CTC TGG GGC CGT GGC ACC CTG GTC

T V S S
ACT GTC TCC TCA

FIG. 72

```
.YM 46 KAPPA LIGHT CHAIN SEQUENCE:

--------------------- F   R   1   -   I   M   G   T ----------------------------
                 5                   10                  15                  20
D   I   V   M   T   Q   S   P   D   S   L   A   V   S   L   G   E   R   A   T   I   N
AC  ATC GTG ATG ACC CAG TCT CCA GAC TCC CTG GCT GTG TCT CTG GGC GAG AGG GCC ACC ATC AAC

------------->                                                   <-------------------
               ______________ CDR1 - IMGT _______________
     25                  30                  35                  40
C   K   S   S   Q   S   V   L   Y   S   S   N   N   K   N   Y   L   A   W   Y   Q   Q
GC  AAG TCC AGC CAG AGT GTT TTA TAC AGC TCC AAC AAT AAG AAC TAC TTA GCT TGG TAC CAG CAG

'  R   2   -   I   M   G   T ---------->                                         <---
                                   ___________ CDR2 - IMGT ______________
5                    50                  55                  60                  65
K   P   G   Q   P   P   K   L   L   I   Y   W   A   S                               T
AA  CCA GGA CAG CCT CCT AAA CTA CTC ATT TAC TGG GCA TCT ... ... ... ... ... ... ... ACC

------------------------------------------    F   R   3   -   I   M   G   T ----
             70                  75                  80                  85
R   E   S   G   V   P       D   R   F   S   G   S   G           S   G   T   D   F   T
GG  GAA TCC GGG GTC CCT ... GAC CGA TTC AGT GGC AGC GGG ... ... TCT GGG ACA GAT TTC ACT

---------------------------------------------------->
                                                      __________ CDR3 - IMGT
    90                  95                  100                 105                 110
L   T   I   S   S   L   Q   A   E   D   V   A   V   Y   Y   C   Q   Q   Y   Y   N   T
TC  ACC ATC AGC AGC CTG CAG GCT GAA GAT GTG GCA GTT TAT TAC TGT CAG CAA TAT TAT AAT ACT

________
            115                 120                 125                 130
P   Q   A   F   G   Q   G   T   K   V   E   I   K   R   T   V   A   A   P   S   V   F
CT  CAG GCG TTC GGC CAA GGG ACC AAG GTG GAA ATC AAA CGA ACT GTG GCT GCA CCA TCT GTC TTC
```

FIG. 73

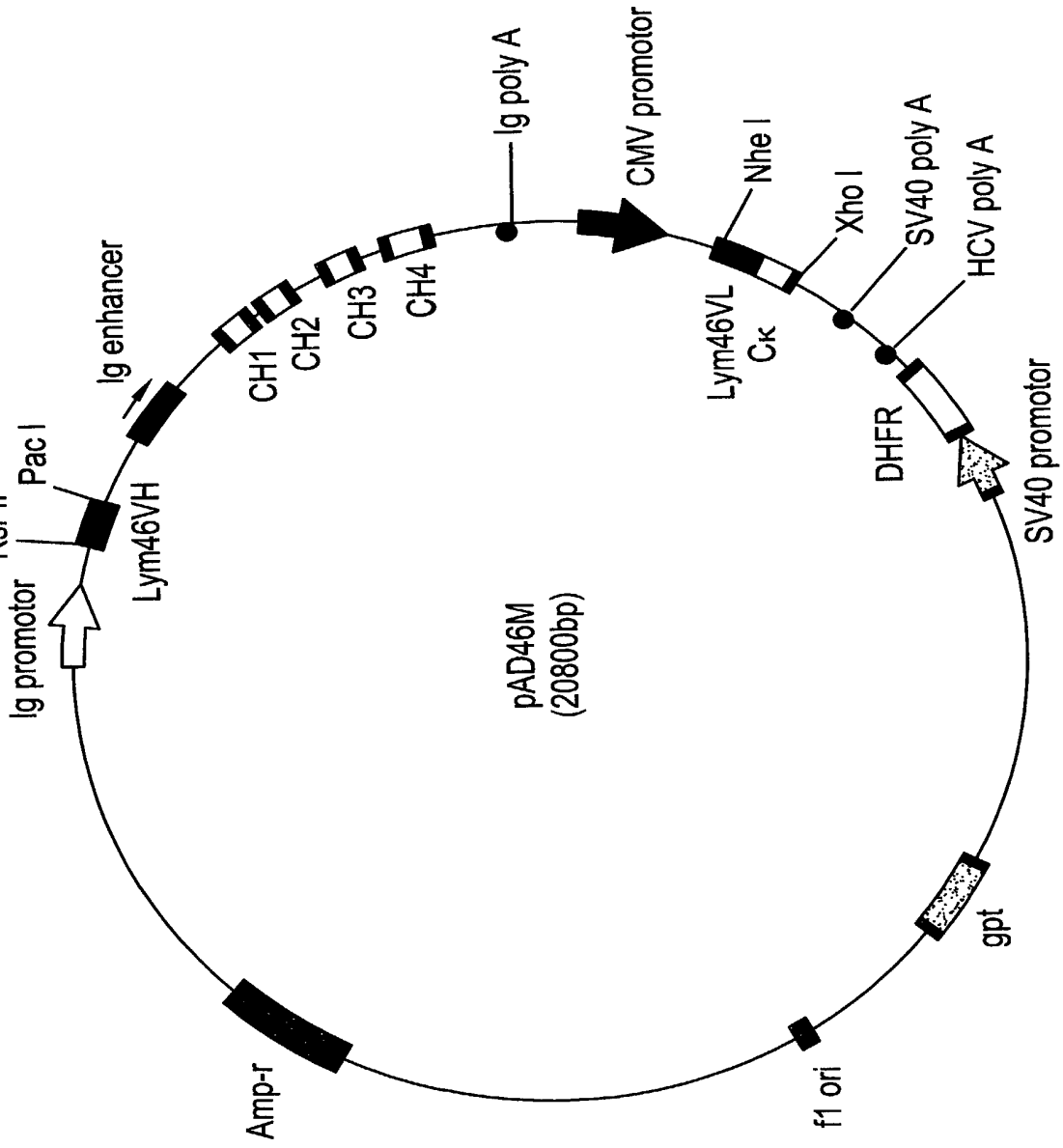


FIG. 74

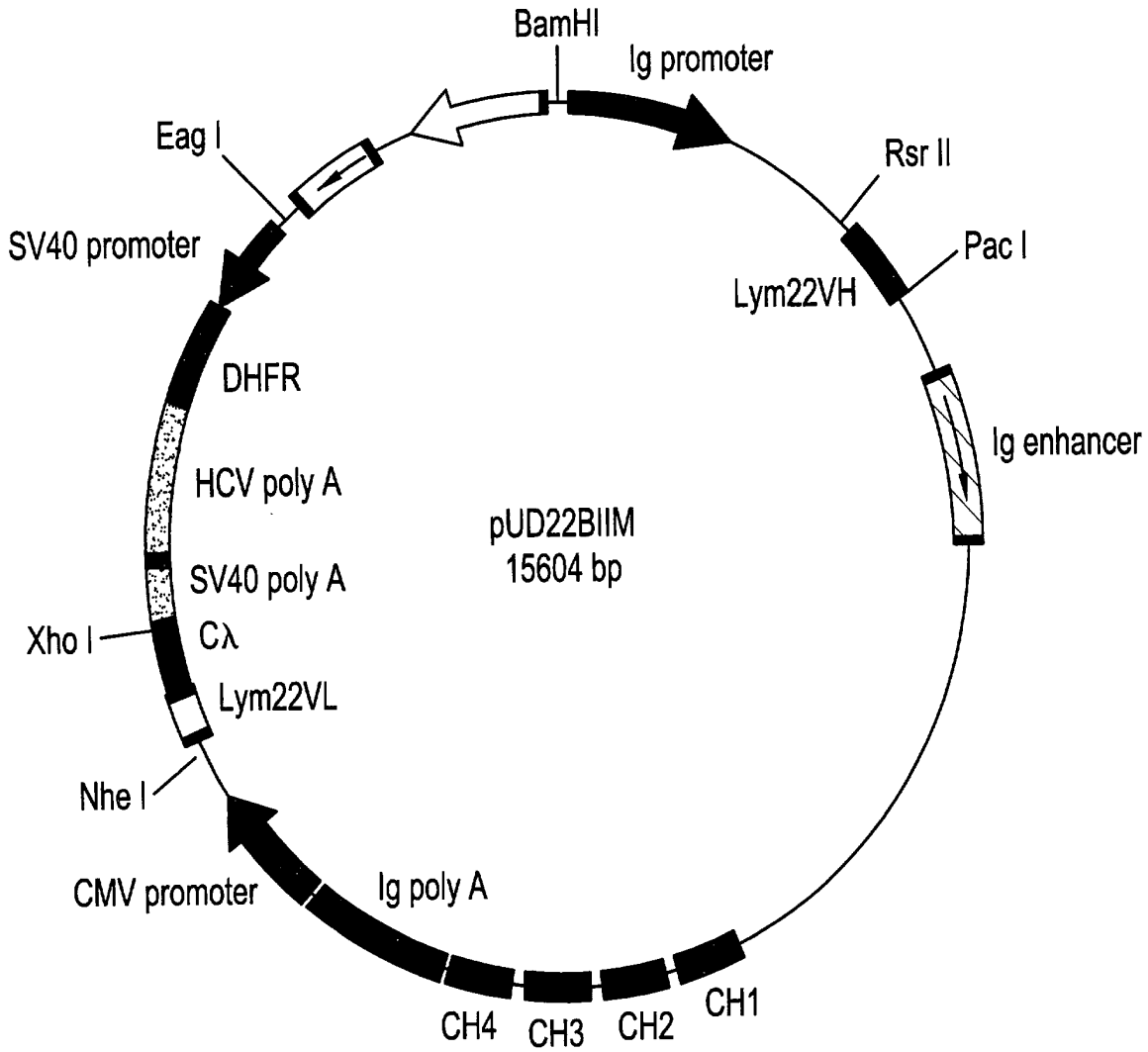


FIG. 75

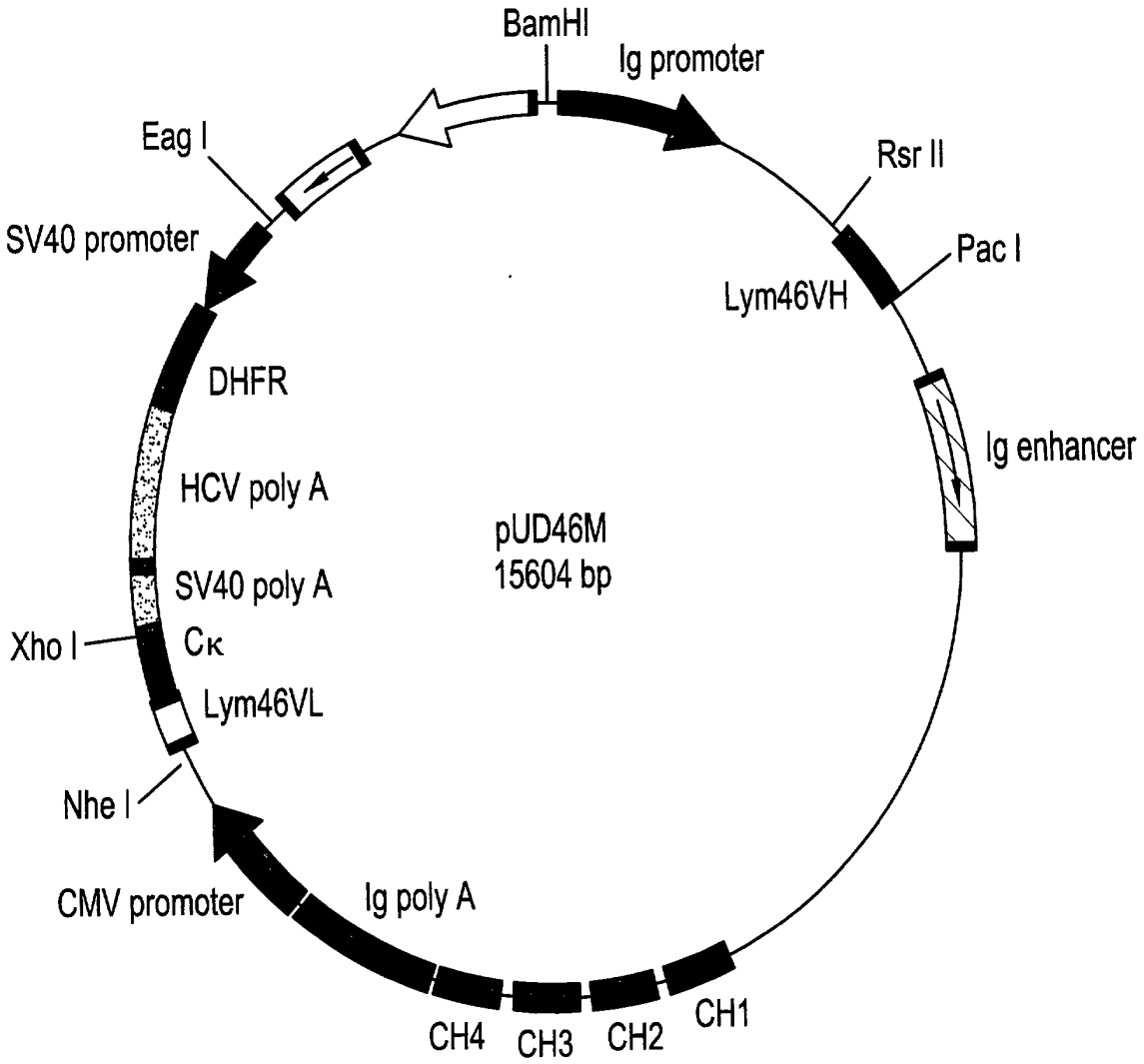


FIG. 76

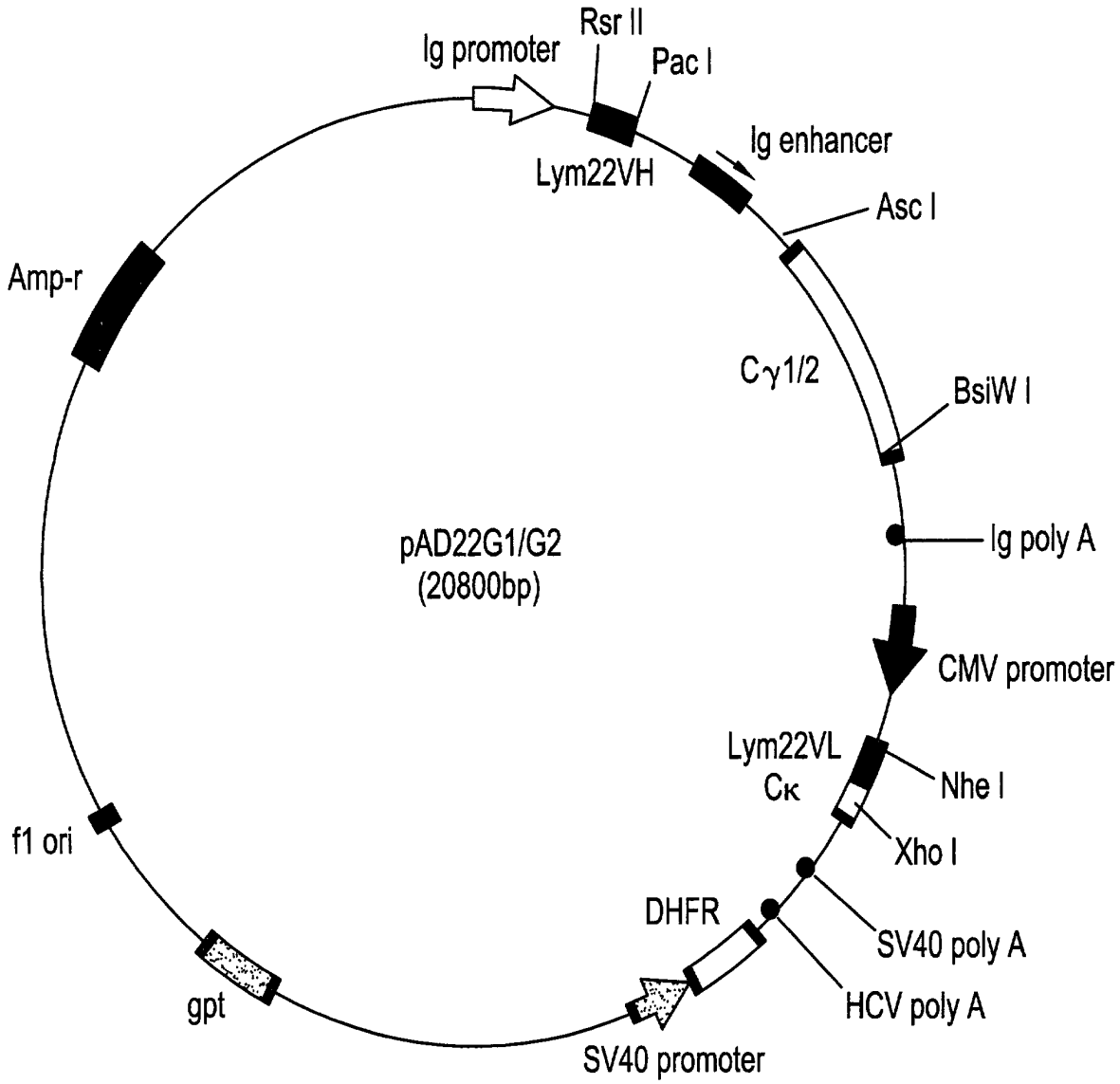


FIG. 77

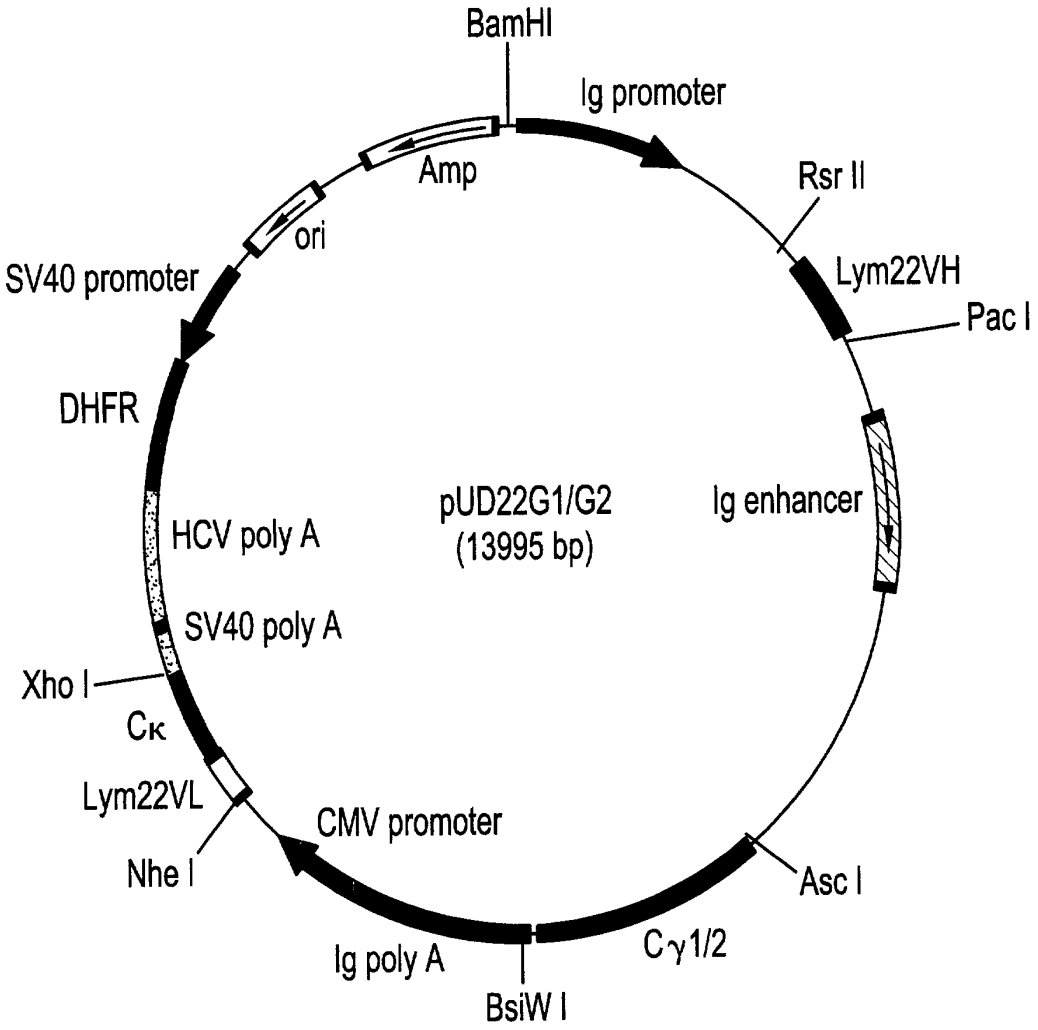


FIG. 78

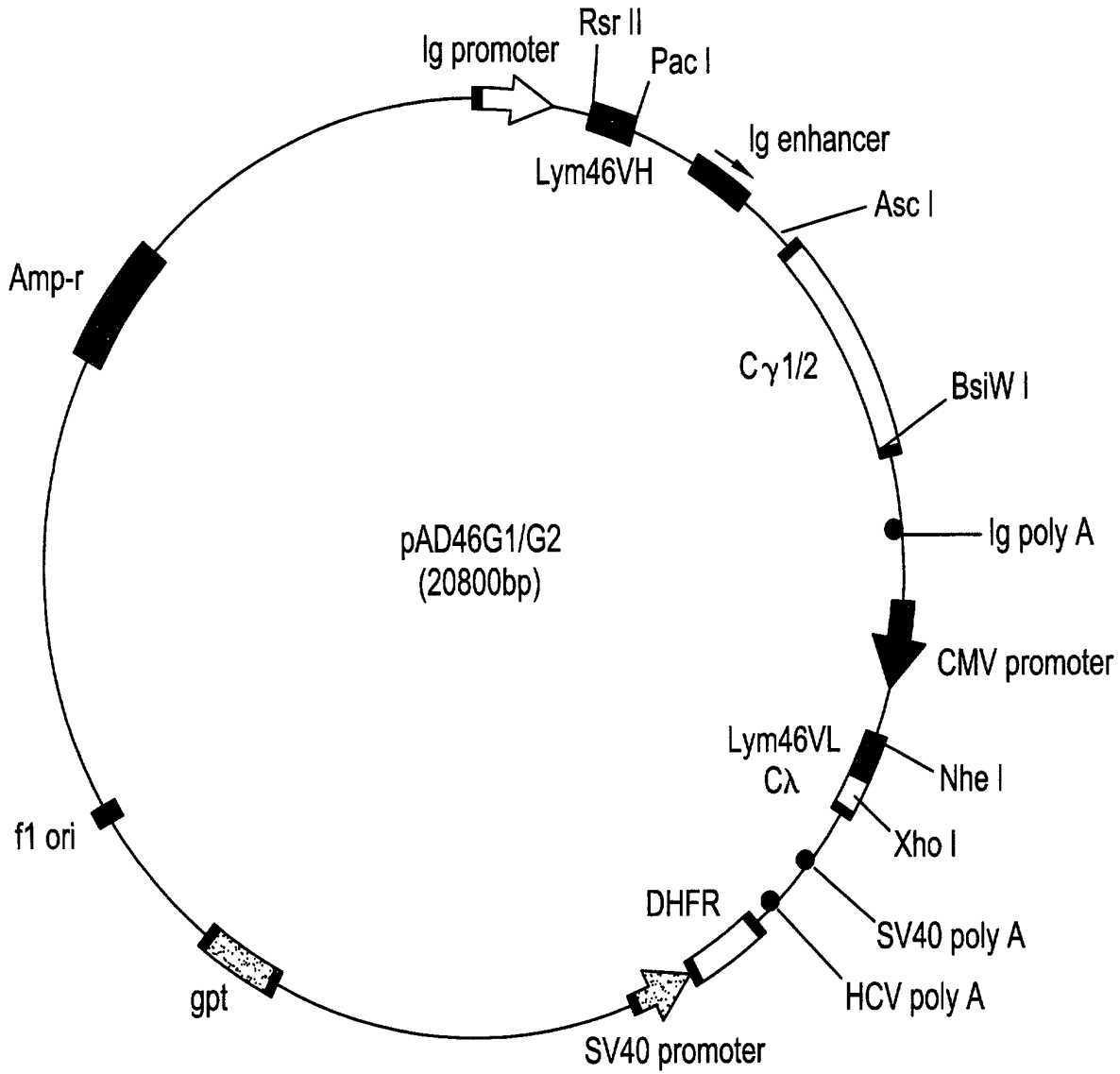


FIG. 79

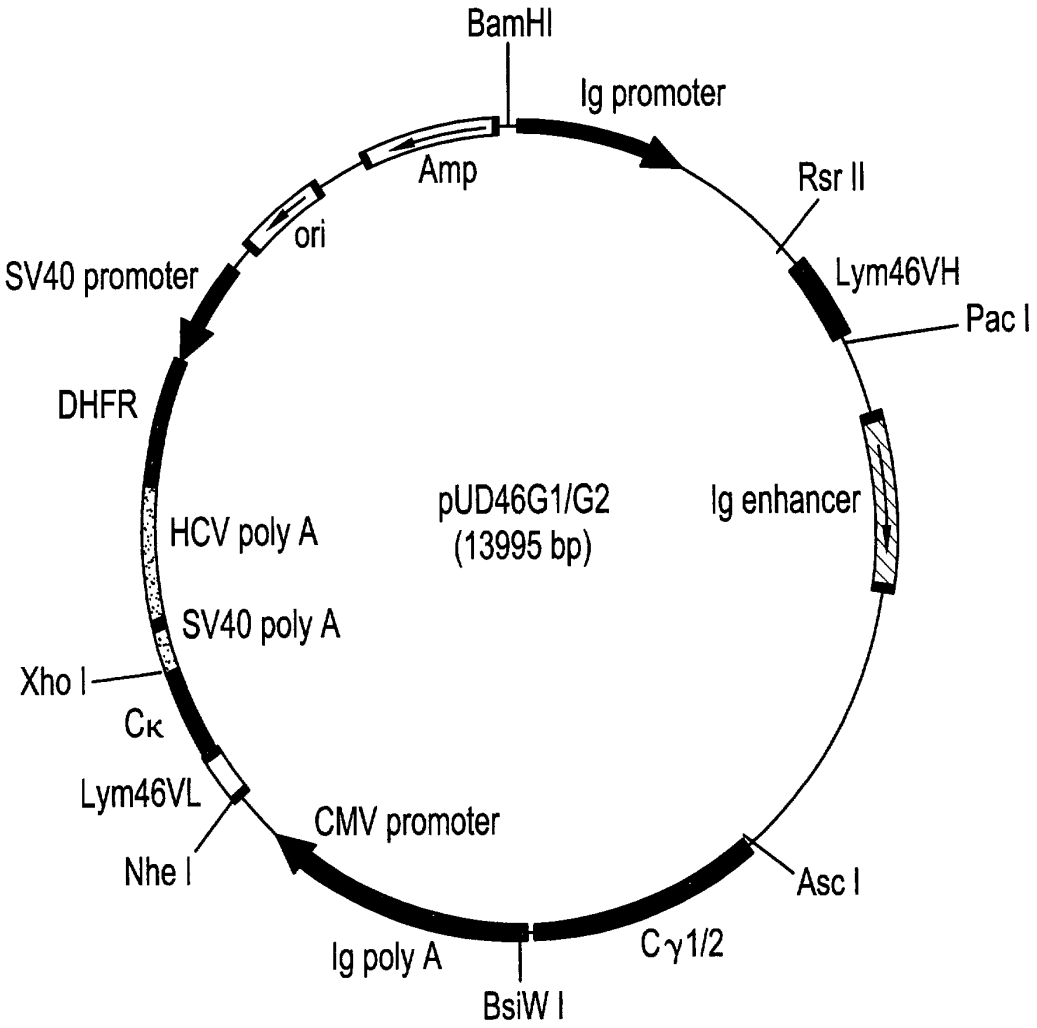


FIG. 80A

TMEV Infected SJL Mice
Treated at 21 Days Post Infection

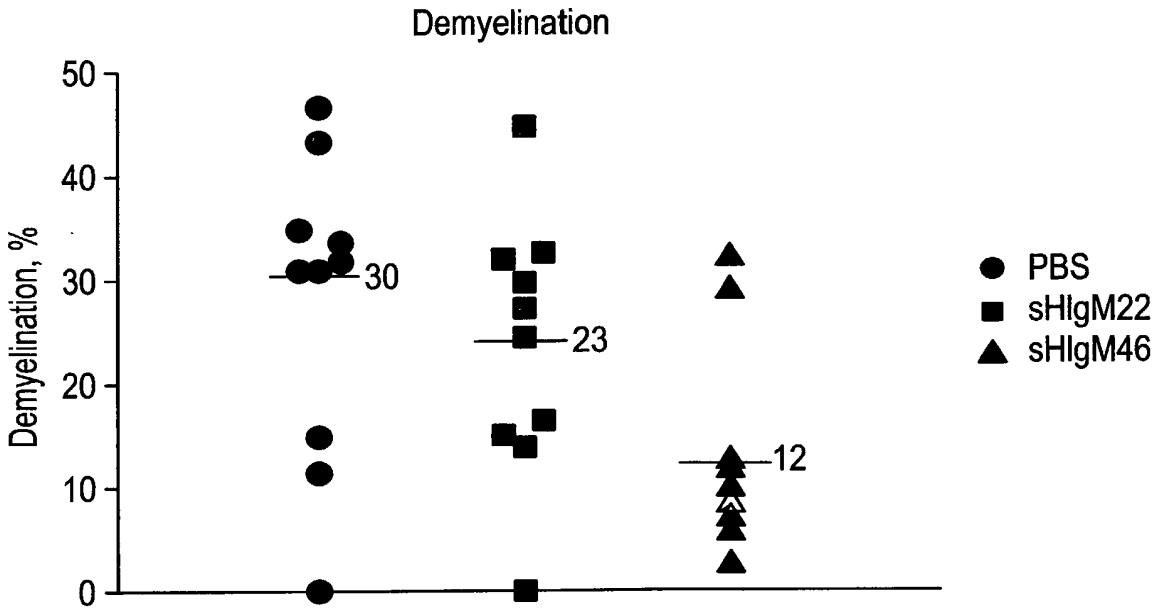


FIG. 80B

TMEV Infected SJL Mice
Treated at 21 Days Post Infection

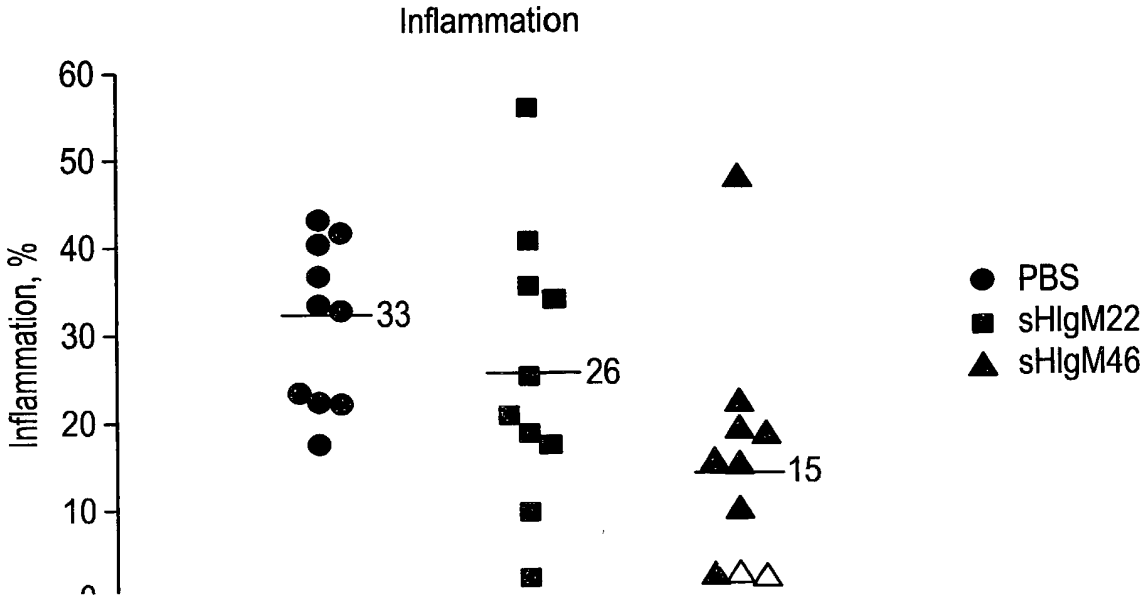
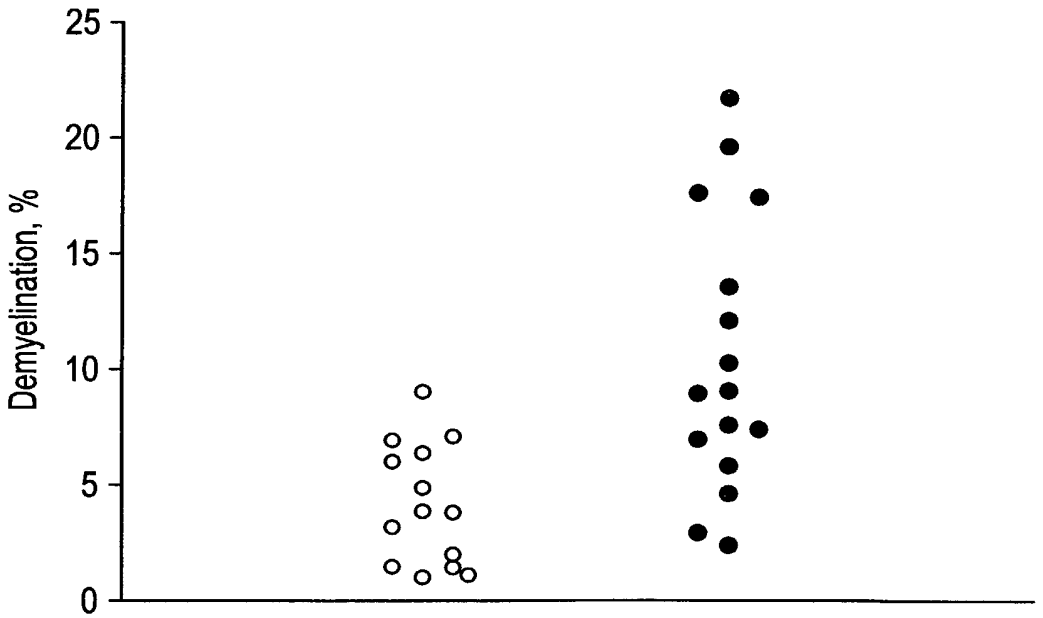


FIG. 81

Chronically TMEV Infected SJL Mice
Treated with sHIgM46 or sHIgM22

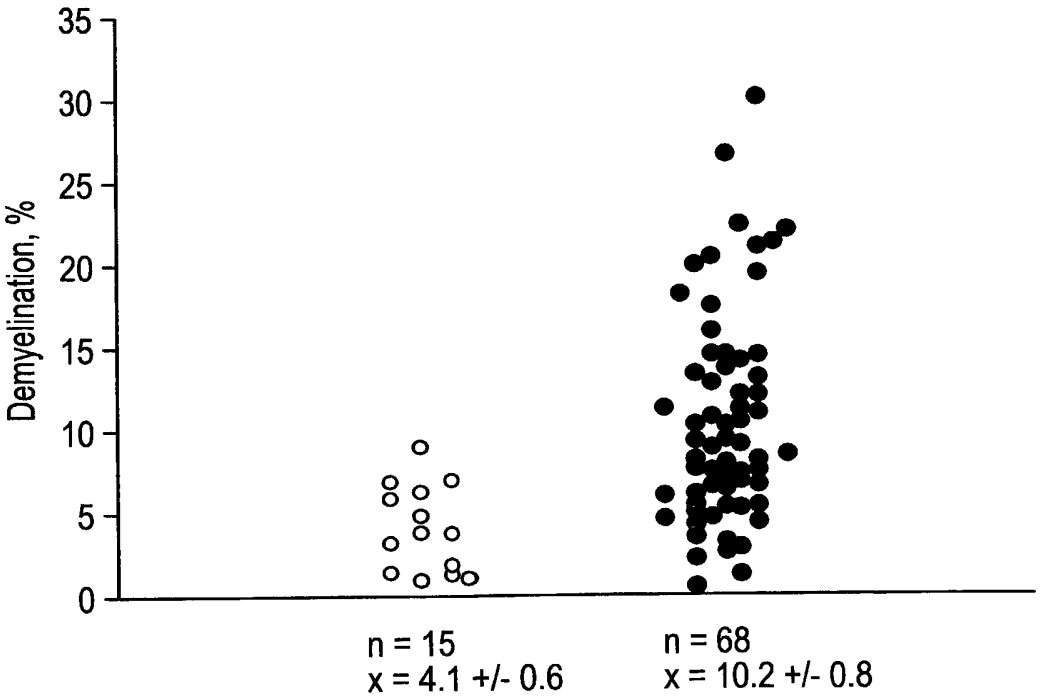


Groups are different by ANOVA, P = 0.001

○ sHIgM46
● sHIgM22

FIG. 82

Chronically TMEV Infected SJL Mice
Treated sHIgM46 vs All Other Antibodies



Groups are different by one way ANOVA, P = < 0.001

o sHIgM46
● other mAbs

FIG. 83

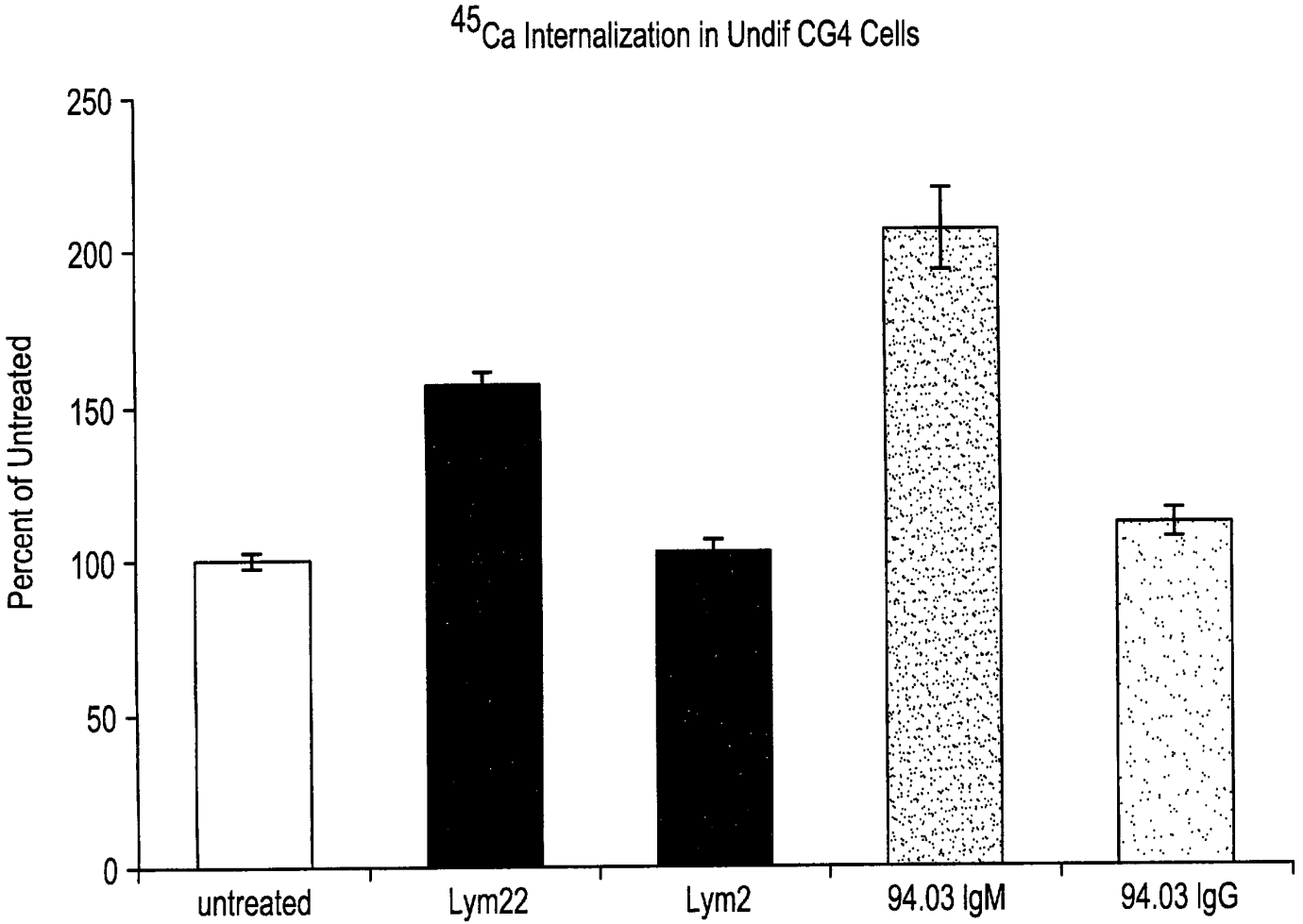


FIG. 84

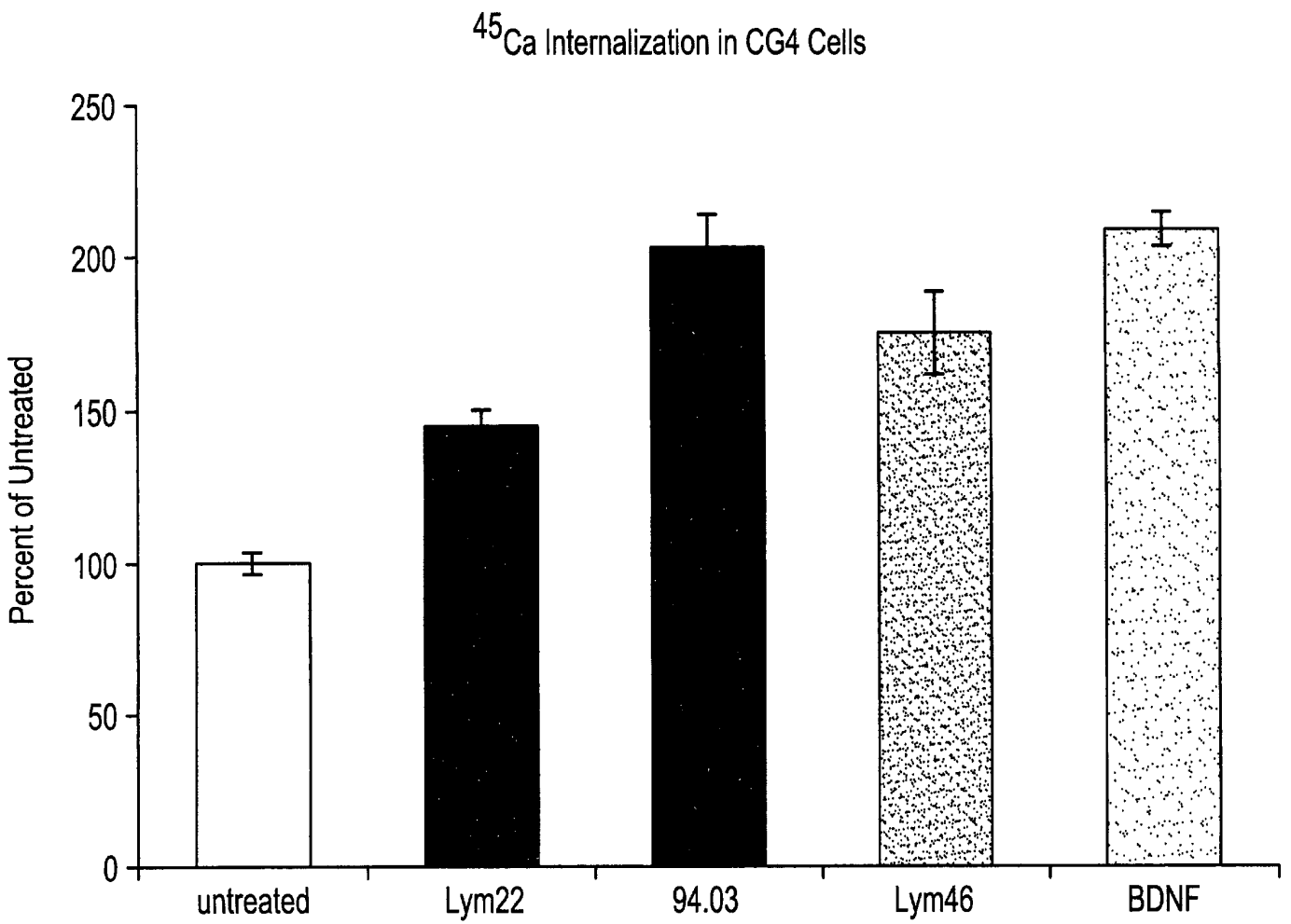


FIG. 85

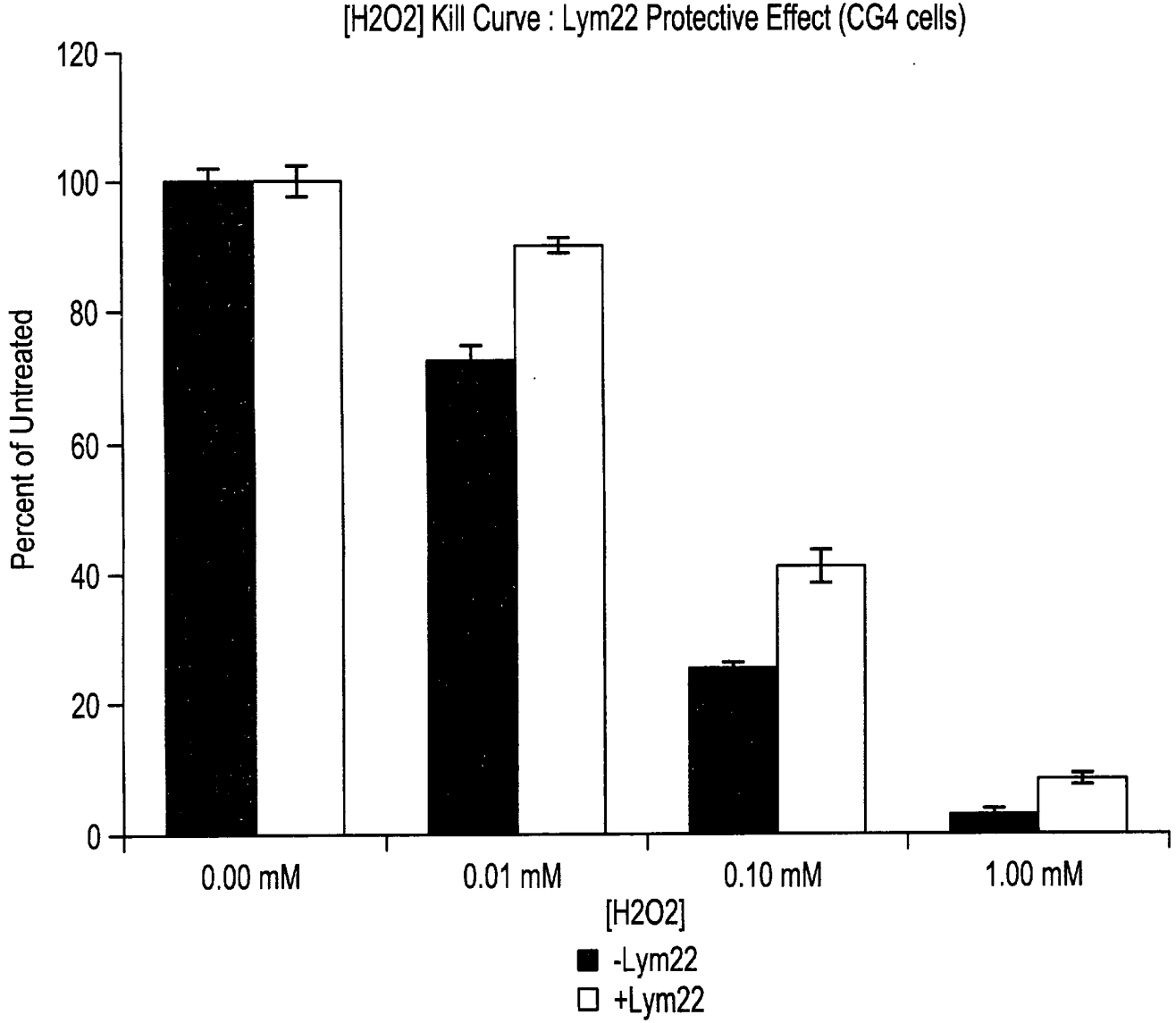


FIG. 86A

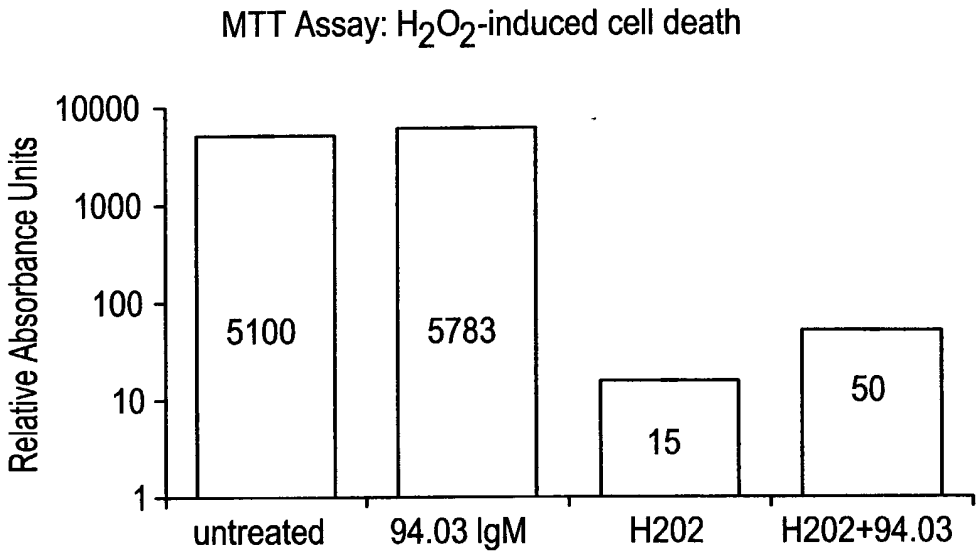


FIG. 86B